DEVOTED TO
TEXTILE CHEMISTRY
AND
WET-PROCESSING
BLEACHING
DYEING
PRINTING
FINISHING

JULY 25, 1949
VOLUME 38, No. 15

AMERICAN DYESTUFF REPORTER

Workhorse for the Fall Season

Browns are indicated as the colors for fall. A review of the Direct Browns available for Viscose Rayons and mixed fabrics shows

DIPHENYL BROWN BBN EXTRA

as one of the most useful in your drug room. It's a real workhorse.

A rich, neutral shade, it is desirable not only because of its wide range (from beiges to dark browns), but for its solubility and extraordinary ability to dye level under the most extreme conditions. Additions may be made at high temperatures regardless of the quantity of salt present in the dyebath without fear of unevenness.

In Urea Formaldehyde Resin Aftertreatment

1. Shade and light-fastness are undisturbed.
2. Wash-fastness is appreciably improved.
3. On Spun Viscose Rayon Gabardines and Twills level, desirably fast-to-light dark browns are undisturbed.

Fabrics tending to form *sharp creases* and folds are dyed level; solubility and level dyeing properties make it useful for Cotton piece goods on pad or jig; Cotton and Viscose Rayon are dyed practically a solid shade; *Acetate effects* while not entirely reserved, are stained unobjectionably in most cases—cross dyeing is definitely possible.

Make Diphenyl Brown B B N Extra available to your dyehouse.

Geigy

Dyestuff Makers Since 1859

GEIGY COMPANY, Inc.

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OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

DOUBLE PURPOSE rainwear and outerwear in general can now be given DOUBLE PROTECTION – water repellency plus water borne stain resistance – with Cyanamid's PARAMUL* 115 semi-durable water repellent. Investigate its ease of application and other desirable features.

THAT SOFT TEXTURE so essential to fabric sales appeal demands fine finishing oils. Rely on Cyanamid SULFONATED OILS to achieve a smooth, soft hand. Our large scale production methods assure *uniform* high quality.

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One of the many advantages of DECERESOL OT Wetting Agents in textile processing is its remarkable efficiency in achieving uniformly level shades in dyeing—at real savings in time and cost.

DECERESOL OT is the fastest wetting, penetrating and dispersing agent available. It has applications in all branches of the textile industry and for all fibres and fabrics, including cotton, wool, silk, linen, rayon and the newer synthetic fibres. It is supplied in liquid form, ready for instant addition to the wet processing bath, without preliminary make-up. As with all Cyanamid textile specialities – penetrants, softeners, finishes, sizing compounds, PARAMUL* Water Repellents and others –our laboratory facilities are available to assist you in its application.

Write for our booklet, "DECERESOL Wetting Agents for Textiles," which lists many ways in which these products can effect savings.

*Reg. U.S. Pat. Off.

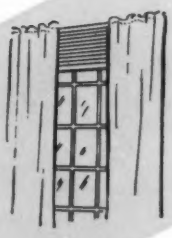
AMERICAN Cyanamid COMPANY
INDUSTRIAL CHEMICALS DIVISION, DEPT. E-7
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

American Dyestuff Reporter, Vol 38, No. 15, July 25, 1949. Published every other Monday. Copyright 1949, by Howes Publishing Co., Inc., One Madison Ave., New York 10, N. Y. Domestic subscription, $5.00; Canadian, $6.00. Foreign, $10.00. Entered as second-class matter, Nov 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.

Sheds showers like a duck's back

Keeps fabrics fresh and new looking

Adds resistance to soil and stain



Improves the "hand" and drape of materials

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Prolongs the life of fabrics

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STABLE • SAFE • CLEAN • EASY TO USE

An effective water repellent for all textile fabrics.

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7 HOOKER ACID CHLORIDES You should know . . .

As a major producer of high quality chlorine, Hooker is able to manufacture acid chlorides of high purity and uniformity. If you are working with dyestuffs, plasticizers, pharmaceuticals, lubricants or in other processing fields where you require good quality acid chlorides, you should check into these Hooker products.

The acid chlorides Hooker can supply are listed below with brief information about their physical and chemical characteristics and their uses. More complete information is given on individual Technical Data Sheets available when requested on your business letterhead. Hooker's Technical Staff is also ready to work with you on the application of Hooker chemicals to your specific problems.

PRODUCT *Chemical Formula and Molecular Weight*	DESCRIPTION AND USES
Metanitrobenzoyl Chloride $NO_2C_6H_4COCl$;185.5	Yellow to brown liquid partially crystallized at room temperature. Last crystal point 28° to 31°C. Manufacture of dyes for fabrics and color photography; intermediate in preparation of pharmaceuticals.
Paranitrobenzoyl Chloride $NO_2C_6H_4COCl$;185.5	Yellow crystalline solid. M.P. 70°C minimum. Manufacture of novocaine, procaine hydrochloride; dyestuffs.
Acetyl Chloride CH_3COCl;78.5	Clear, colorless to pale yellow liquid. Dist. R. 2.5° incl. 51°C. To introduce acetyl group into organic compounds. Manufacture of intermediates, dyes, and pharmaceuticals.
Benzoyl Chloride C_6H_5COCl;140.5	Clear, colorless liquid. Boiling point 198°C. As a highly reactive acid chloride, it may be used to introduce the benzoyl group into organic compounds, especially through Friedel-Crafts reactions. It is used in the manufacture of synthetic perfumes, pharmaceuticals, dyes and resins.
Phosgene (Carbonyl Chloride) $COCl_2$;98.9	Liquified gas. F.P. —126°C., B.P. 8.2°C. Manufacture alkyl and aryl chlorocarbonates and dialkylcarbonates; dye intermediates; metal chlorides and anhydrides; pharmaceuticals; perfumes.
Sulfuryl Chloride SO_2Cl_2;135.0	Light yellow liquid. B.R. 2° incl. 69.5°C. Reacts with organic acids to form other chlorides and anhydrides. Chlorinating agent for chlorophenol and other chlorination reactions in organic synthesis.
Thionyl Chloride $SOCl_2$;119.0	Clear, pale yellow to red liquid. Refined Grade, 97.5% min. $SOCl_2$; Technical Grade, 93+%. Manufacture of organic acid chlorides and anhydrides, alkyl chlorides from corresponding alcohols. It may be used to introduce sulfur alone or in combination with oxygen.

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provide the answer to the demand for
better color fastness in textiles.

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BRILLIANT GREEN J

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A mellow, full-toned Jade . . . for every form
of cotton and rayon . . . by every method of vat application.
Pleasing as a self-shade, notably satisfactory in combination.

Excellent printability on fine cotton and rayon dress fabrics
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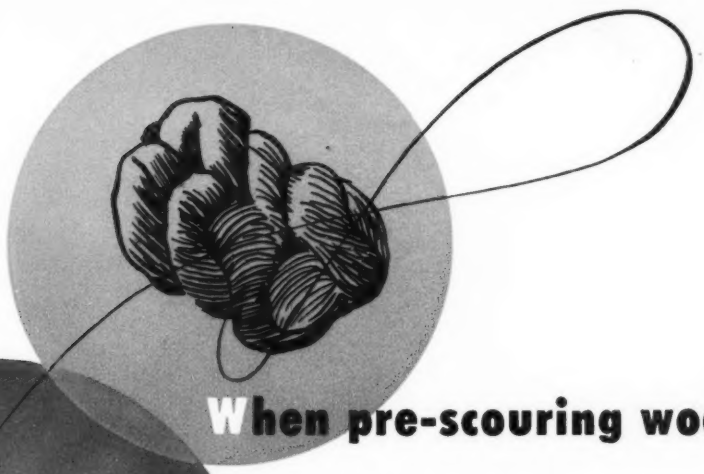

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use 2% to 4% Nacconol* NR

AMERICA'S LEADING SYNTHETIC DETERGENT

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CLEANER YARN Complete removal of waxes, pectins & mineral, animal or vegetable lubricating oils.

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LOWER PROCESSING COSTS

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there's nothing like the ONYXSANS for softening!

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PERMANENT EFFECTS
EASY TO USE

THE ONYXSANS are *cationic* softening agents, substantive to textile fibers. They create finishes which are integral parts of the fiber.

On viscose, acetate, bemberg and cotton, the hand is permanent, lasting for the life of the fabric. On other textiles, the finish shows outstanding resistance to washing or cleaning.

The ONYXSANS can give you practically any hand you want, from firm and waxy to mellow and lofty. The nap is never plastered down. Even on rough, nubby goods, you'll get a fine, soft nap.

There are no changes necessary in equipment or processing methods. The Onyxsans are readily applied in the pad, jig, quetsch, mangle or dye beck. You'll be satisfied, too, with the relatively small amounts required to get your finish.

Stable to hard water, organic acids and electrolytes, the Onyxsans develop no odors, rancidity, mark-off or stiffness.

They're well worth looking into! Write for Onyx Technical Bulletin TX-1, which tells the whole ONYXSAN story and describes the characteristics of the individual members of this famous family of cationic softeners.

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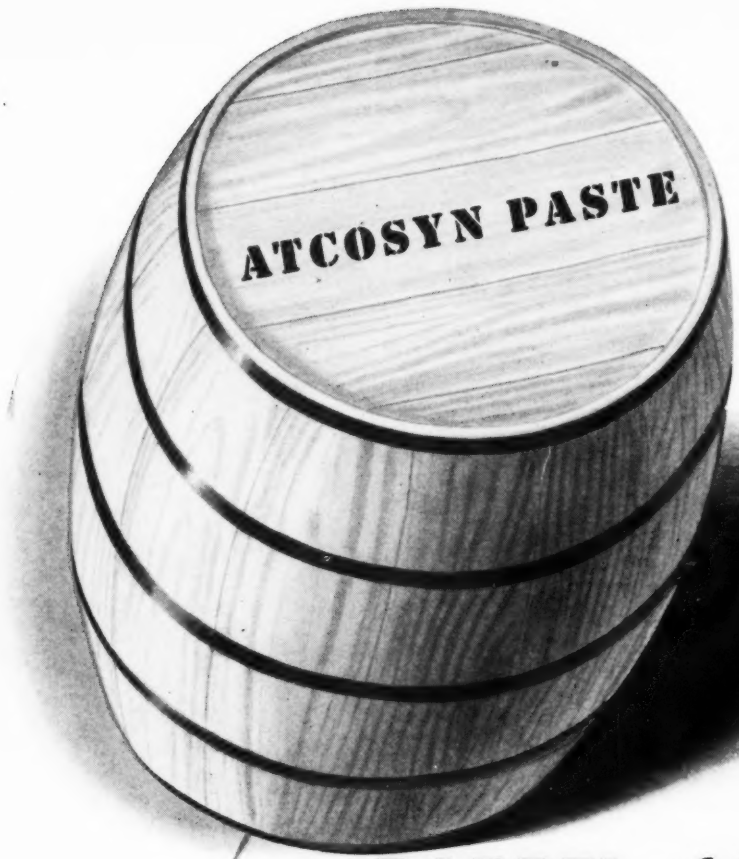
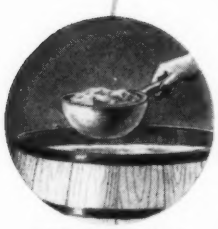
onyx **CHEMICALS FOR TEXTILE PROCESSING**



a BARREL of ECONOMY

ATCOSYN PASTE

A SYNTHETIC DETERGENT



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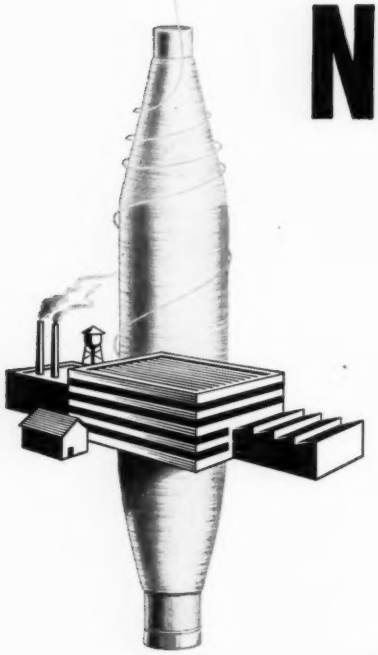
is a must



And by "this" we mean WORSTED yarn. Here we can represent it only as a line . . . but, as you know, it's a line full of significance. For top quality WORSTED yarns, economically produced, mean enduring customer satisfaction, increased sales, greater profit.

And that's where Nopco's NEW 1656-R fits right into your WORSTED production picture. For here's an oil specially formulated to *assure more efficient processing . . . superior quality finished goods.*

You will find Nopco 1656-R:

ELIMINATES static

ELIMINATES oxidation

ELIMINATES *75%* of soap costs (and, by scouring out freely, assures clearer, brighter dyeing)

MINIMIZES broken ends

In a word, Nopco's NEW 1656-R enables the worsted manufacturer to achieve *outstanding results*—comparable to those obtained by users of famous Nopco FUA wool oil in carding, spinning and finishing woolens.

Write us today, and profit by getting all the facts about NEW Nopco 1656-R . . . the remarkable modern aid to better WORSTED production.

New!

NOPCO 1656-R for better WORSTED production

*T. M. Reg. U. S. Pat. Off.

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NOPCO CHEMICAL COMPANY

Formerly National Oil Products Company

HARRISON, NEW JERSEY

Branches: Boston • Chicago • Cedartown, Ga. Richmond, Calif.

Just imagine that you're holding a glass of crystal clear spring water up to the sun. Why? That's the quickest way to describe CLEARFILM—a crystal clear sizing and finishing gum for rayons and mercerized cottons.

crystal clear as spring water

CLEARFILM is an outstanding specialty developed by National. It gelatinizes readily in hot water and can be applied at normal temperature. The result? Always a crystal clear solution . . . an equally clear film on any textile fabric . . . lustrous, often brightened colors . . . uniformly maintained shades.

CLEARFILM—which is just as effective but less expensive than gum arabic and gelatin—is ideal for dyeing and finishing in the same operation. And it's an excellent extender for many synthetic resin finishes. Write for a test sample.

National also produces the following *starches—and specialties with easily demonstrated superiority:* AMBERTEX a heavy-bodied thickener for white discharge, rapidogen and vat color printing; FLOTEX to replace natural gums for printing; TABLE ADHESIVE for screen printing; FLOCK ADHESIVE 970 for chenille flock printing; HOOSIER PEARL CORN STARCH . . . THIN BOILING CORN STARCH . . . CHLORINATED CORN STARCH . . . and DEXTRINES.

Address: 270 Madison Ave., New York 16; Boston, Philadelphia, Atlanta, New Orleans, Indianapolis, Chicago, San Francisco, and other principal cities. *In Canada:* National Adhesives (Canada), Ltd., Toronto and Montreal. *In Holland:* National Z.I., Veendam.

National
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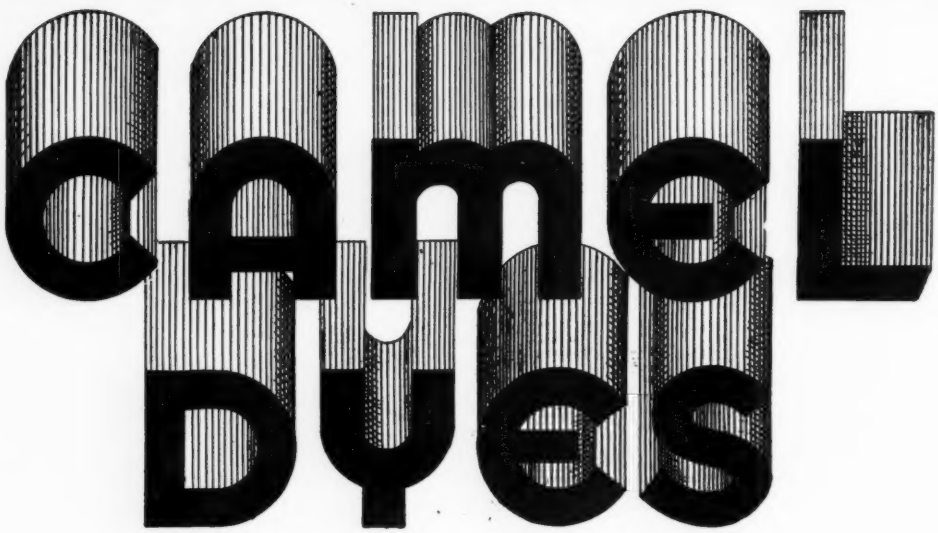
A SIZING AND FINISHING GUM FOR RAYON AND COTTON



THE CAMEL LINE OF
DEPENDABLE DYESTUFFS
has served the textile mills of America
without interruption since
1876.

This broad experience assures
PROMPT • EFFICIENT • ECONOMICAL SERVICE
TO MEET ALL DYESTUFF REQUIREMENTS

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You can count on Santomerse No. 1 for the thorough penetration you need for level dyeing of yarns on packages and beams. It is economical. As little as from two to eight ounces per hundred pounds of yarn is needed for efficient penetration.

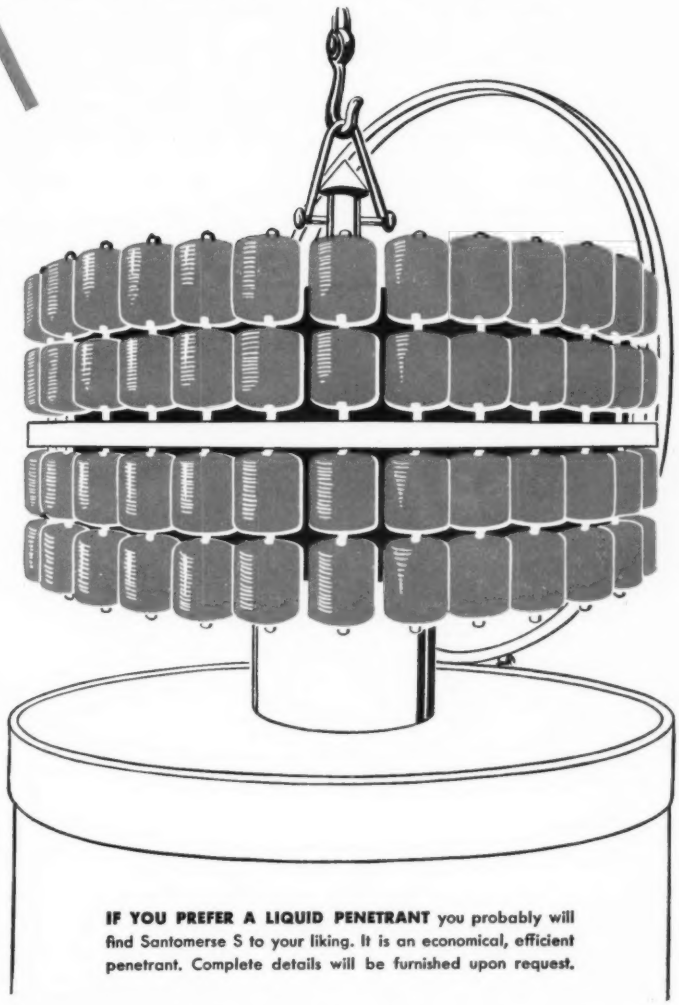
Santomerse No. 1 is effective in hard or soft, hot or cold water and in neutral, acid or alkaline solutions. It does not form insoluble curds that hamper your operations and lower the quality of your product.

Santomerse No. 1 is giving excellent service in the textile industry, not only in beam and package dyeing but wherever an efficient detergent, penetrant or dispersing agent is required.

Try Santomerse No. 1 in your beam and package dyeing. For complete details on this efficient, economical penetrant, mail the coupon, contact the nearest Monsanto Sales Office or write: MONSANTO CHEMICAL COMPANY, Desk G, Phosphate Division, 1779 South Second Street, St. Louis 4, Missouri.

SANTOMERSE No. 1

...efficient, economical penetrant for package and beam dyeing



IF YOU PREFER A LIQUID PENETRANT you probably will find Santomerse S to your liking. It is an economical, efficient penetrant. Complete details will be furnished upon request.

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- Santomerse D
- Santomerse S
- Sterox* CD
- Sterox SE
- Sterox SK
- Sterox 5
- Sterox 6

EXHIBITION AT THE 28TH NATIONAL CONVENTION, AATCC

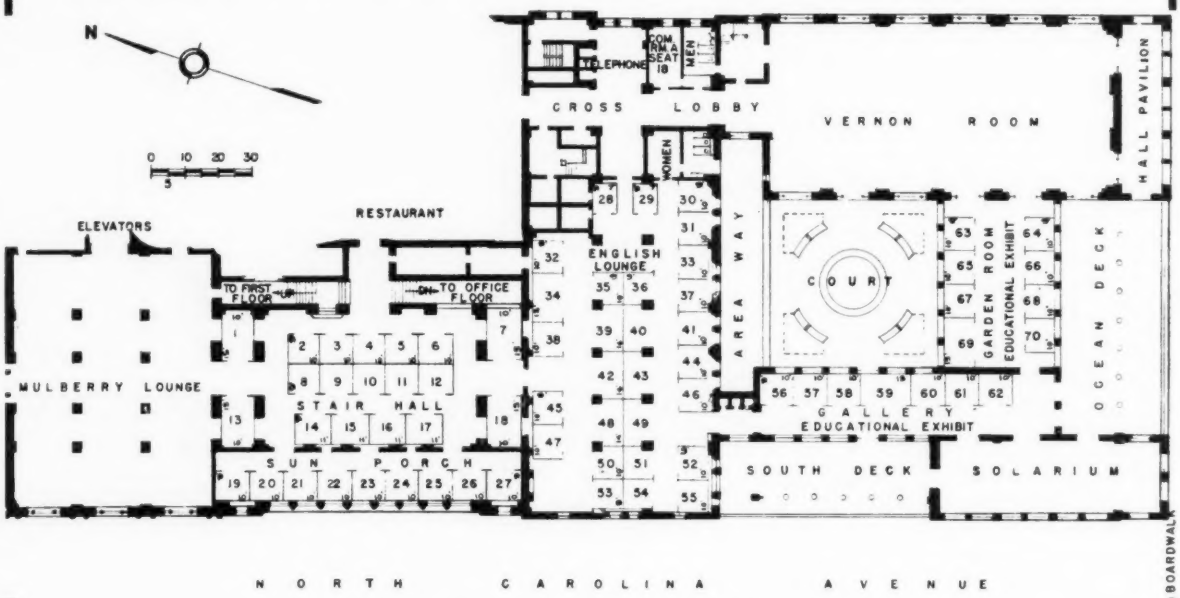

Exhibit Area at Chalfonte-Haddon Hall

The list of exhibitors at the Atlantic City Convention of the American Association of Textile Chemists and Colorists, Chalfonte-Haddon Hall, October 13-15, is growing daily. Exhibit space is open to the textile and allied industries, as well as institutions interested in textile education. There still is space available but don't wait until it's too late —get your reservation in early. The following firms and educational institutions had reserved exhibit space as of June 24th:

Booth	
3 and 4	H. W. Butterworth & Sons Co.
5 and 6	E. I. du Pont de Nemours & Co., Inc.
7	Alco Oil & Chemical Corp.
8 and 9	National Aniline Division, Allied Chemical & Dye Corp.
10 and 11	Miller Motor Co.
12	Daily News Record
14 and 15	Smith, Drum Co.
16	Textile Bag and Specialties Co.
17	Calgon, Inc.
18	General Dyestuff Corp.
31 and 33	Reliance Electric & Engineering Co.
32	National Milling & Chemical Co.
34	General Electric Co.
35	American Dyestuff Reporter
36	John Campbell & Co.
37	Textile World
38	Arthur H. Thomas Co.
39	Scholler Brothers, Inc.
40	Rohm & Haas Co.
42	Sandoz Chemical Works, Inc.
43	American Aniline Products, Inc.
44	Jacques Wolf & Co.
45	Amalgamated Chemical Corp.
46	Venango Engineering Co.
47	Sidney Blumenthal Co., Shelton Looms
49	American Viscose Corp.
52 and 55	Calco Chemical Division, American Cyanamid Co.
57	Institute of Textile Technology
58	Lowell Textile Institute
59	Philadelphia Textile Institute
60	New Bedford Textile Institute
63 to 69	A.A.T.C.C.
70	Atlas Electric Devices Co.

Information regarding exhibit space may be obtained from the Chairman of the Exhibits Committee: M. H. Klein, Sandoz Chemical Works, Tioga and Witte Streets, Philadelphia 34, Pa.

CHALFONTE-HADDON HALL, ATLANTIC CITY
OCTOBER 13-14-15

palatines for wool

palatine fast dyestuffs

more production with less manpower

. . . offer the lowest coloring costs for quality results.

. . . approach chrome color fastness (without the addition of chrome) by simple acid dyeing process.

. . . are fast to light, washing, perspiration, crocking, sea water and wear.

. . . are level dyeing on mixed wool and carbonized goods without neutralization—with excellent penetration. Most types are dischargeable with Rongalite.

. . . are particularly suitable for men's wear, dress goods, gabardines, tropical worsteds, cloakings, bathing suits, knitting yarns, carpet yarns and tops.

. . . on wool-nylon mixtures they produce good tone in tone dyeings of very good fastness to light and washing.

GDC

GENERAL DYESTUFF CORPORATION

435 HUDSON STREET • NEW YORK 14, NEW YORK

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Nothing takes the place of Glycerine

Modern textiles are built to stand up in every type of climate. And there's hardly a phase of modern textile processing that doesn't benefit from one or more of the many unusual properties of—GLYCERINE.

As a hygroscopic agent and softener, glycerine is a standard ingredient of sizing compositions. As a penetrating agent, dispersant, and thickener, glycerine is used extensively in printing pastes. As a chemical intermediate, it's a favorite in the preparation of those alkyd resins which are helping to make possible today's wind- and water-resistant fabrics, anti-mold and rot-proof garments.

Glycerine's combination of physical and chemical properties can be matched by no other product. That's why in the textile industry—or in almost any industry—*Nothing takes the place of glycerine!*

GLYCERINE PRODUCERS' ASSOCIATION
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Technical GLYCERINE NEWS

GLYCERINE SECTIONS OF BEILSTEIN TRANSLATED! Now available for the first time, an English translation of the Glycerine Sections of Beilstein's famous *Handbuch der Organischen Chemie* (4th Edition). Complete in *one* volume entitled "GLYCERINE AND SOME GLYCERINE DERIVATIVES." Publication authorized by the Attorney General of the United States. Compiled and edited by Dr. R. N. Du Puis, Dr. C. S. Miner, Jr. and J. B. Segur—long acknowledged as authorities in the field of Glycerine and its properties. Amassed in its 210 pages are an unusually large number of Glycerine derivatives with extensive cross-references. Also included are a complete table of contents and a detailed index of the derivatives and fatty acid esters of Glycerine. A timely, comprehensive volume for your chemical reference library. Order from the Glycerine Producers' Association enclosing $2.50 (check or money order) for each copy.

★ ★ ★

TO INCREASE TEXTILE PRINTING SPEEDS and thereby reduce costs, a high concentration of solvent in the printing paste is recommended according to a report presented before a leading textile association. For nylon and acetate rayon printing with acetate colors, a glycerine-containing formula is claimed to be most efficient. (T-12)

★ ★ ★

SUPERIOR "OILED-SILK" FABRICS can be made by replacing linseed oil with alkyd resins. Such products form clear, colorless films which do not yellow on aging and are free of objectionable odors, it is claimed. (T-13)

★ ★ ★

GLYCERINE VISCOSITIES TABLE AVAILABLE. The Research Laboratories of the Glycerine Producers' Association program of glycerine research, has prepared a table of viscosities of glycerine in aqueous solution from 0 to 100 per cent, at from 0 to 100 degrees C. To obtain your copy, check T-14 on the coupon below. (T-14)

GLYCERINE PRODUCERS' ASSOCIATION, DEPT. 13
295 MADISON AVENUE
NEW YORK 17, N. Y.

I should like to know the source of the items appearing in Technical Glycerine News which I have checked below.

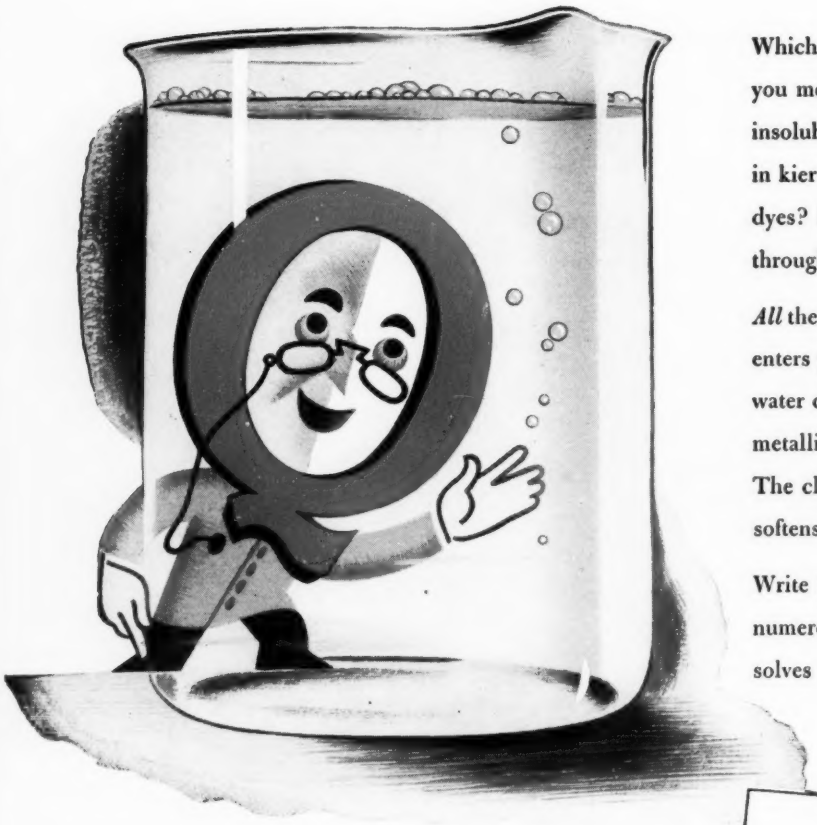
☐ T-12 ☐ T-13 ☐ T-14

NAME.....

COMPANY.....

ADDRESS.....

A CLEAR SOLUTION TO YOUR PROCESSING PROBLEMS ... when you use QUADRAFOS*



Which of these processing problems bothers you most? Precipitation of lime soap and other insolubles in hard water? Iron stains on goods in kier boiling? Interference with metal-sensitive dyes? Poor penetration of bleach liquor through redeposited metallic soap?

All these problems disappear when QUADRAFOS enters your process water. That's because no other water conditioner is so effective in tying up all the metallic ions that are at the root of the troubles. The clear solution you get when QUADRAFOS softens the hardest water is the tip-off.

Write for the whole story of the numerous ways QUADRAFOS solves textile processing problems.

softens water without precipitation...deflocculates ...redissolves precipitates...promotes free rinsing

*Reg. U. S. Pat. Off.

ONLY WITH **QUADRAFOS** CAN WATER DO SO MUCH, SO WELL

RUMFORD DIVISION, HEYDEN CHEMICAL CORP.

Technical Service Department
20 Newman Avenue
Rumford 16, Rhode Island

Please send me further information about the use of QUADRAFOS in textile wet processing. I'm particularly interested in:

- ☐ Raw wool scouring
- ☐ Piece goods scouring
- ☐ Kier boiling
- ☐ Reducing bleach requirements
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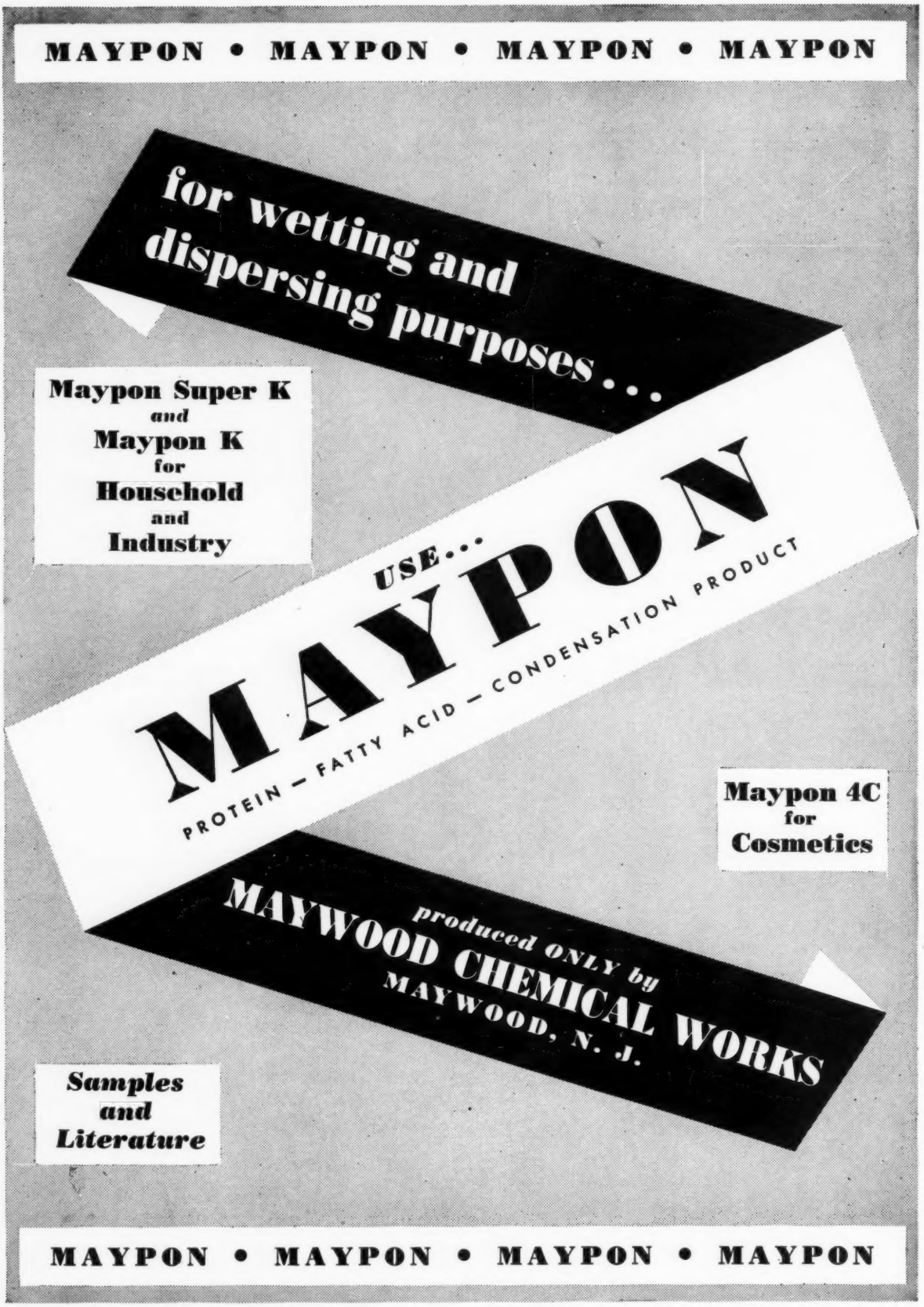
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JULY 25, 1949

VOLUME 38 NUMBER 15

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A PROPOSAL FOR SPECIFYING THE STABILITY OF COLORED MATERIALS TO RADIANT ENERGY*

E. M. LOWRY

AT the present time the specification of the color-fastness of colored materials is indefinite and may even be misleading. For example, the American Society for Testing Materials, Designation D506-45T *(1)*, provides that "standard" dyeings be used for comparison when evaluating the fastness to light of dyed textiles. Following exposure to a designated light source, the samples are classified as:

"1—Satisfactory. — Specimens which show no greater change in color than the reference standard.

"2—Unsatisfactory—Specimens which show a greater change in color than the reference standard."

While such a specification may be of value in expressing the merits of the specimen relative to that of a standard, it still does not give information as to whether or not the sample shows any change nor does it give information that is at all quantitative.

Another American Society for Testing Materials designation, D620-45T *(2)*, which is concerned with the color fastness of plastics, provides that the relative amount of color change is reported as: (1) none, (2) slight, (3) appreciable, (4) extreme. The terms used are defined as:

2—A slight change is one which is perceptible with difficulty.

3—An appreciable change is one which is readily perceptible without close examination but is insufficient to alter markedly the original color of the specimen.

4—An extreme change is one which is very obvious and has resulted in a marked alteration of the original color of the specimen.

In addition, "the character of the color change, whether lighter or darker, and any other noteworthy effect of the exposure to light on the appearance or the condition of the specimen shall be reported." Here again the changes recorded are given in a descriptive rather than a quantitative form.

The *Colour Index*, published by the British Society of Dyers and Colourists, rates dyes for color fastness to light as follows *(3)*:

"1—No perceptible alteration after exposure for one month.

"2—Only slightly altered after fourteen days but distinctly faded after exposure of one month.

"3—Only slightly altered after eight days but considerably faded after exposure for fourteen days.

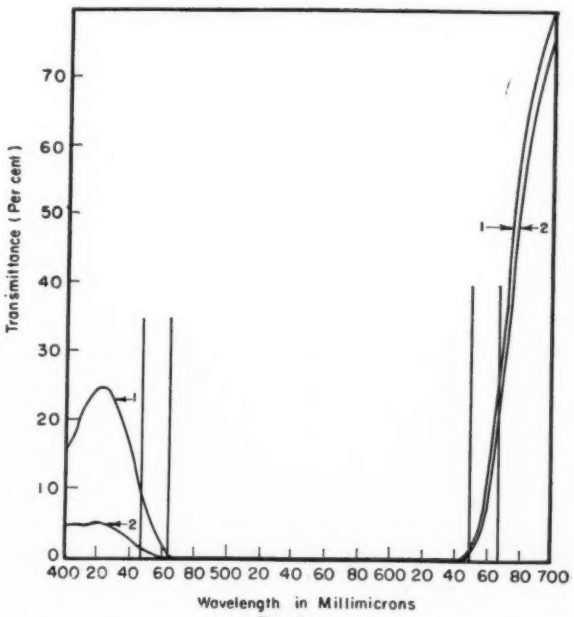

Fig. 1
Illustration of the Limitation of the Selected Ordinate System for Expressing Change at the Extremes of the Visible Spectrum.

* Communication No. 1257 from the Kodak Research Laboratories.

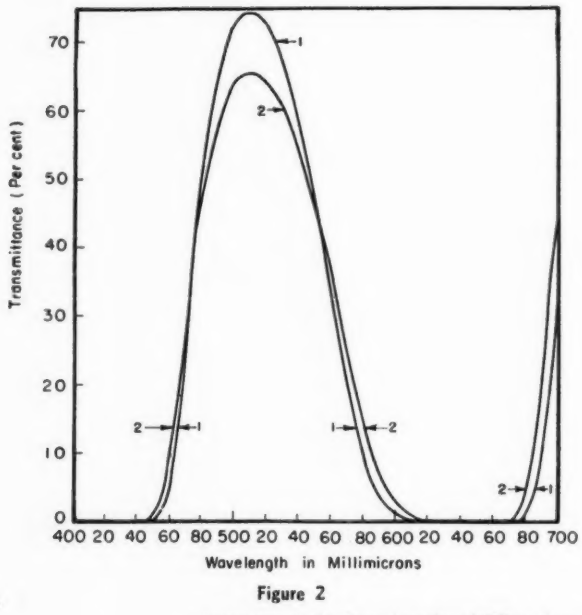

Figure 2

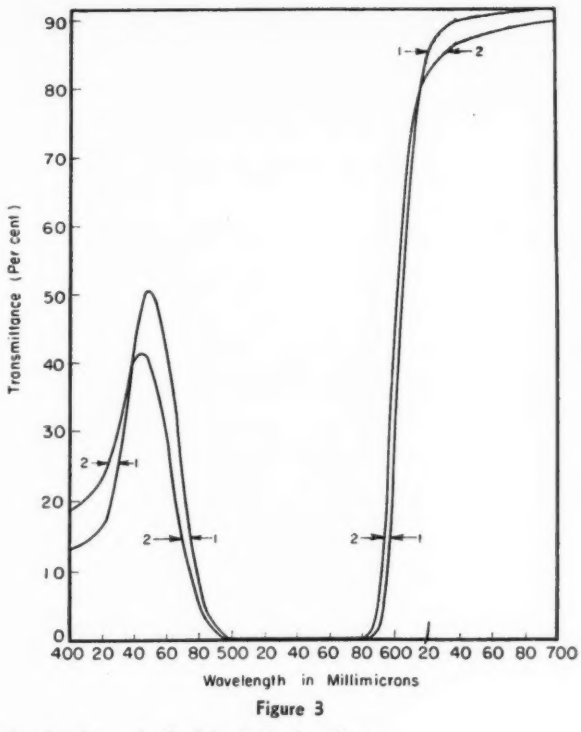

Figure 3

Illustration of the Error Introduced When Area Under the Curves Is Used for Indicating Change.

"4—Altered after four days.

"5—Considerably faded after exposure for one day."

None of these methods of expressing color fastness, with the possible exception of the *Colour Index* method, reveals what might be termed the "scientific" approach.

In the manufacture of dyed-gelatin filter film for photographic and other purposes, similar designations have been used. However, they have never been entirely satisfactory and the author proposes a method which, it is believed, will permit rating for stability to be made on an understandable and quantitative basis.

The first step in making a light filter for a particular application is to examine the spectral absorption characteristics of the available dyes. This is done in order that the most suitable combination of coloring agents may be selected.

When the proper dye or dye mixture that will yield the required spectral absorption in the finished filter has been chosen, the filter-maker must next answer the question: "How stable will it be?" In the past, this question has been answered, for the most part, by a system similar to those mentioned at the beginning of this article. Since none of the methods has been satisfactory on a quantitative basis, the author has given considerable thought to devising a better one.

For some years the practice in these Laboratories has been to make a spectro-

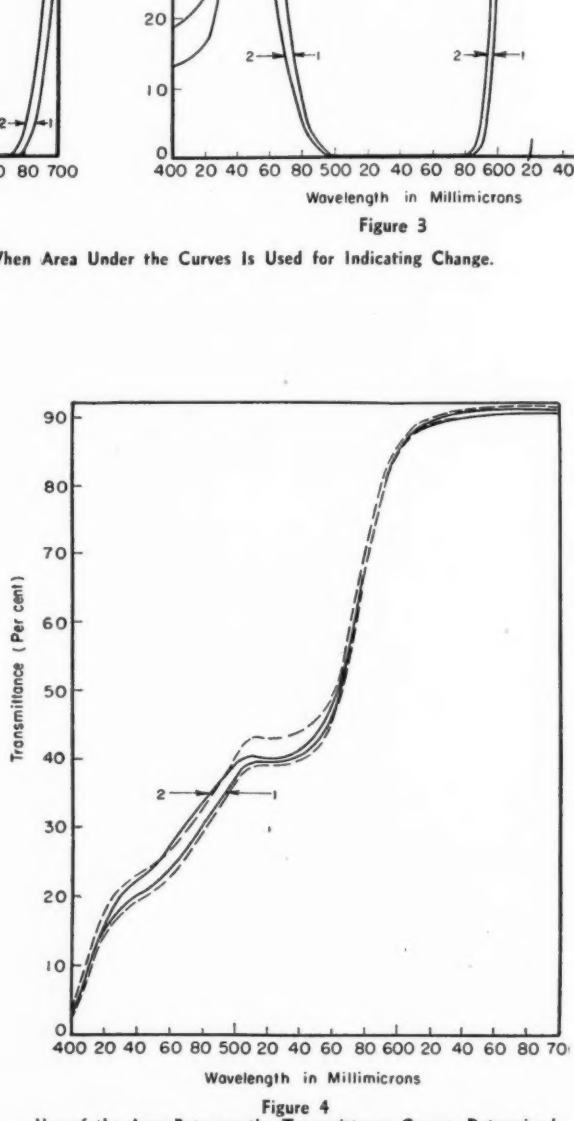

Figure 4
Use of the Area Between the Transmittance Curves, Determined Before and After Exposure, for Representing Change. Class A.

photometric exmination of each sample, both before and after exposure, care being exercised to insure that the same area of each sample is read at the beginning and end of the test period. The proper interpretation of the test data, however, has always presented a problem.

Attempts have been made to calculate the change in transmittance, following exposure, using the data for the tristimulus function *(4)*, which is somewhat cumbersome unless the Selected Ordinate method is applied. This latter method requires, for rapid calculation, the spectral transmittance curve plus a selected ordinate plate and an adding machine. However, this procedure is inadequate for filters which transmit only the extremes of the visible spectrum. Even when using one hundred selected ordinates *(4)*, there are too few ordinates in these regions to be representative. Reference to Figure 1 shows the limits reached by this system. The ordinate (vertical line) farthest toward the violet falls at 446.6 mμ, and the one farthest toward the red is at 664.5 mμ. Curve 1, Figure 1, shows the spectral transmittance before exposure and Curve 2 that following exposure.

Most applications of filters are based on the luminous energy transmitted and therefore it seemed that perhaps an integration of the area under each spectrophotometric curve, taken before and after exposure, would yield a usable result. This line of attack was predicated upon the fact that the total transmittance for luminous energy is proportional to the area under the spectral transmittance curve. An error, however, is introduced whenever the curves, determined before and after exposure, cross since the curve

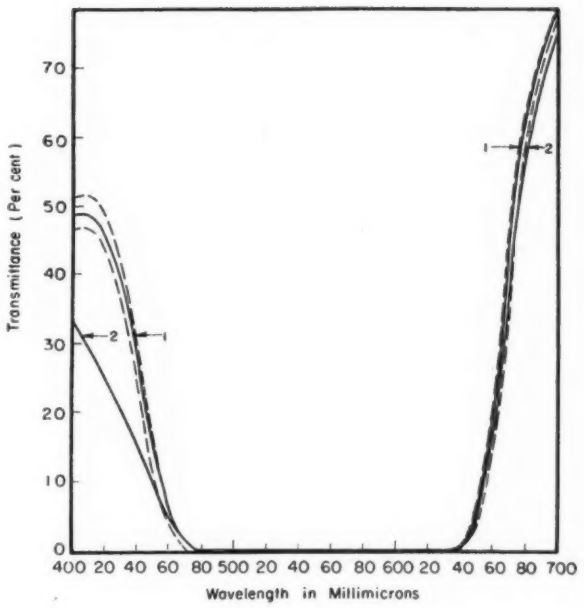

Figure 6
Use of the Area Between the Transmittance Curves, Determined Before and After Exposure, for Representing Change. Class C.

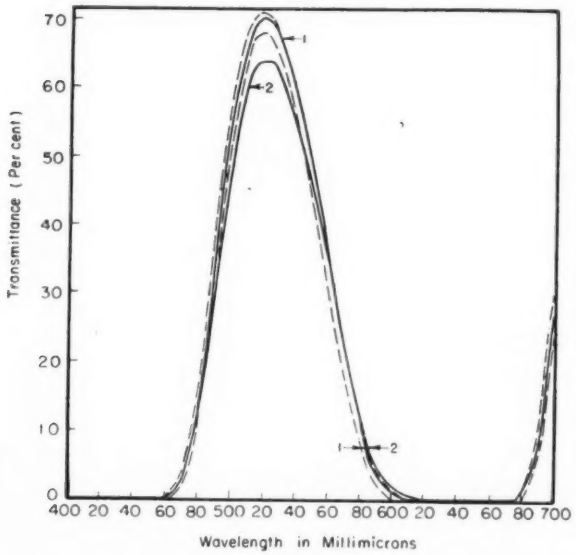

Figure 5
Use of the Area Between the Transmittance Curves, Determined Before and After Exposure, for Representing Change. Class B.

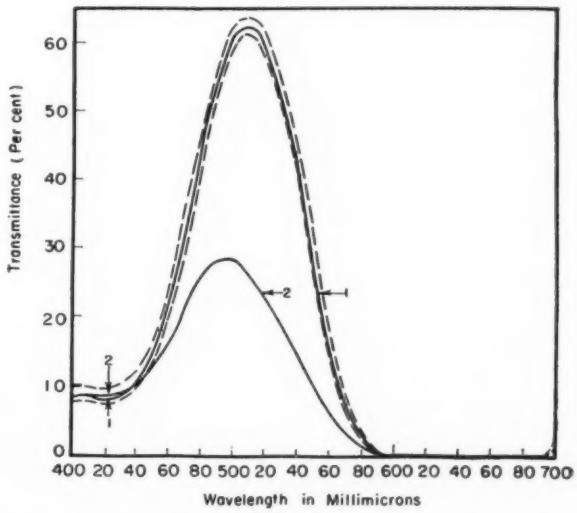

Figure 7
Use of the Area Between the Transmittance Curves, Determined Before and After Exposure, for Representing Change. Class D.

shape may change without change in the area enveloped (Figs. 2 and 3).

A third way of treating the data, which offers the most promise, is to determine the area between the transmittance curves, secured before and after exposure. This area represents any change that has taken place and, if desired, may be expressed as a percentage of the area under the transmittance curve of the specimen before exposure. The area under the curve (solid line 1, Fig. 4) for the original, unfaded sample is determined and also the area between the two solid lines (lines 1 and 2, Fig. 4). The ratio between the two areas represents the change following exposure to the testing agent selected, which in this case was radiant energy from a carbon arc.

Although this method does not indicate the nature of the change, whether fading or darkening, it does give a numerical value which is proportional to any alteration in the transmittance of the sample.

For a complete picture, an additional description may be given in terms such as changed hue, darkened, lightened, etc.

The proposed method of quantitatively specifying changes following exposure to radiant energy is just as applicable to the effects of gas, washing, etc., on dyed textiles, paint films, plastics, or any material in which a change in transmittance or reflectance is important. The equipment necessary is available in many industrial plants where dyes, pigments, and other coloring agents or colored materials are manufactured. While the simplest means of determining the areas involved is by means of a planimeter, summation of the ordinates of the transmittance-*versus*-wave length plot yields a reasonably good approximation to these areas.

In the production of light filters, a further refinement of the procedure just described has been applied so that the filters may be classified for stability. Use is made of the fact that, for manufacturing purposes, certain tolerances must be established within which the transmittance may vary and yet have a satisfactory product. The method applied consists in (a) determining the percent difference between the light and the dark tolerances for a given filter (Dashed curves, Figs. 4, 5, 6, 7), and (b) then comparing the percent change after exposure, as described in a previous paragraph and determined from solid curves in Figs. 4, 5, 6, 7, with the manufacturing tolerance, on the following basis:

Class A—Those filters which show a change of not more than one-half the difference between the envelopes of the light and dark limits (Example, Fig. 4).

Class B—Those filters which show a change which may be equal to, but not greater than, the difference between the envelopes of the light and dark limits (Example, Fig. 5).

Class C—Those filters which show a change greater than the difference between the envelopes of the limits but not more than twice this difference (Example, Fig. 6).

Class D—Those filters which show a change of more than twice the difference between the envelopes of the limits (Example, Fig. 7).

The four classes described in the preceding paragraphs are given for illustrative purposes since the interpretation of changes resulting from exposure must be given careful consideration. When tolerances for allowable change are established, thought should be given as to whether it is the function or the appearance of the article that is of major importance. If a certain degree of color change does not affect the usefulness of an article, a considerably greater amount of fading may be tolerated than if appearance is the chief feature to be judged.

It should be kept in mind that the purpose of a stability test is to determine how the product will react under conditions of practical use. Therefore, to be at all significant, any test must simulate very closely the conditions of use. There is some danger in applying the results of accelerated stability tests, since the tests may not represent the actual situation which will be encountered by the product when it is in the hands of the consumer. For example, our experience has been that there is practically no correlation between the fading produced by a carbon arc, of the type commonly set up in a laboratory, and that by prolonged exposure to daylight and sunlight. In some cases, an exposure of twenty-four hours to a high-intensity arc will cause a greater change in a sample than will be produced by exposure for two weeks in a south window. The reverse situation also occurs, namely, that placing a sample in a south window for a few hours will result in a greater alteration than will a corresponding exposure to a high-intensity arc. Radiant energy from a tungsten lamp may have effects that are quite different from those produced by either of the sources mentioned. The temperature and humidity conditions during the test period also are important factors in many cases and should not be neglected.

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BLEACHING OF LINEN PIECE GOODS

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Introduction

IN the early years the bleaching of linen goods was done by steeping or boiling the cloth in alkaline solutions of vegetable ashes and also of lime and ammonia in the form of putrified urine, and by grassing or crofting in the fields alternately, until the desired result had been obtained. Finally the goods were soured in butter milk or in rice water to neutralize the alkali. In the middle ages the Dutch were famous bleachers and their process took about eight months to obtain a full bleach. About 1750 sulfuric acid was substituted for the sour milk and the time for bleaching was reduced to four months. In 1785 Berthollet proposed the use of chlorine in bleaching. At this time the bleachers had to make the chlorine themselves and expose the goods in chambers to the action of the gas or steep the goods in an aqueous chlorine solution. The process was detrimental to the health of the workers, but in 1792 the chlorine was combined with potash and in 1799 with slaked lime, forming bleaching powder. The bleaching process was speeded up and the pleasant bleaching fields soon disappeared, the work being carried out mostly in the bleachhouses. The bleaching action of the sun, air and moisture was only used to complete the chemical process, this combined

action taking about three weeks, and is in general use today in Europe and England.

Today however, we can obtain equally as good, if not better, results by purely chemical means and the grassing process becomes obsolete. Even today, some claim that pure chemical procedure alone is harmful and causes tendering of the cloth and the opinion that bleaching made in the fields gives definitely best results is very common. We are aware that the bleacher can, with such active chemicals as chlorine and acid, cause considerable damage if negligently used, but well controlled chemical methods in the hands of a competent bleacher give first class results and is decisively cheaper.

In the past two decades bleaching technique has rapidly improved and new methods and chemicals are in use. Hydrogen peroxide is replacing chlorine in cotton bleaching and the efficient continuous method for mass production is a great step forward. Then we have sodium chlorite as a new bleaching agent. It is interesting to note that these new inventions and methods originated in U. S. A., the traditional home of bleaching reform, as did the use of soda ash in the old lime boil method.

Even the bleaching of linen has made great progress during the past two decades especially in the bleaching and handling of yarn. From the technical journals however, we read very little concerning the bleaching of linen piece goods. Evidently the specialists in these fields have been unwilling to take the responsibility and risk of damaging such valuable bleach-lots and therefore have shown little interest in experimenting with new processes.

For twelve years the author has studied the bleaching of linen piece goods and tried to apply new methods to obtain a perfect white with as little treatment as possible and with a minimum of deterioration of the fiber. I have found that a first class full white cannot be obtained without a lime boil, as with cotton, nor can chlorine in one form or another be eliminated. Cotton bleachers, with the exception of those in England, have long since discontinued the use of lime, and the smell of chlorine will no doubt be missing from cotton bleach works before many years are past.

The bulk of the full-bleached linen goods consists chiefly of sheetings, table cloths, napkins, towels and handkerchiefs, which are all produced in many varieties. They are woven mostly of raw and boiled yarns, but often also of half-bleached yarns, especially in the coarser and tighter qualities. The linen yarn in the green condition contains a large amount of gummy and resinous matter, so that cloths which might present a firm close texture in the unbleached state, would become thin and impoverished in a perfectly bleached condition, if woven of raw yarn.

The bleaching can be carried out in the usual cotton bleaching plant where the cloth runs in a rope form. Wide sheetings and table cloths should not be run faster than about 80 yards per minute, narrow cloths about 110 yards per minute. Since linen qualities vary considerably, it is very important to select for the same bleach lot pieces with the same bleaching properties. This in turn limits the size of the lot, which in practice has proved to be about a 1000 lbs., in order to obtain good quality control, especially in the chlorine solutions. Four small high-pressure kiers of about 90 cu. ft. volume, fitted with external multitubular heater and circulation system, are required. If sodium chlorite is used for the oxidation, one of the kiers must be able to stand its action. Further some small washing machines suitable for saturating the cloth with boil liquors, acid and chlorine, are required, an effective rope washing machine and some tanks, all of which are ordinary machines used in cotton bleach works.

Process

If there is a possibility of working with sodium chlorite, the best and simplest scheme consists of following operations:

1. Boiling with lime.
2. Souring with hydrochloric acid.
3. Oxidation with sodium chlorite.
4. Boiling with sodium carbonate.
5. Oxidation with sodium chlorite.

This process is suitable for cloth woven of raw and boiled yarn, or of half-bleached yarn, but the amounts of the chemicals required vary. Unfortunately, most bleachers have not the opportunity of using sodium chlorite, but must oxidize with bleaching powder solutions. The scheme varies then from the above mentioned as follows:

1. Boiling with lime.
2. Souring with hydrochloric acid.
3. Treatment with hypochlorous acid.
4. Boiling with sodium carbonate.
5. Treatment with hypochlorous acid.
6. Oxidation with hydrogen peroxide.

Even this process gives very good results, although the former, using chlorite, is safer, yields brighter and finer whites and causes less tendering of the fiber.

Let us survey the various stages of the procedure and find out the essential and most important factors.

LIME BOIL.—Many attempts have been made to avoid the lime boil, but without success. Not even such an excellent agent as chlorite can replace it, but must be used in co-operation with it. Caustic soda is not to be recommended because it destroys the characteristic gloss of the linen, giving also more fibrous appearance and causing a greater loss of weight. On account of its poor solubility, lime is a comparatively weak alkali and can be used in abundance without danger, but 10% on the weight of the material is sufficient for green bottomed and 3-4% for half-bleached goods.

The cloth is impregnated with hot milk of lime and plaited into the kier. The lime liquor is then pumped into the kier from below, driving most of the air out of the kier. This evacuation of the air is most important; if omitted, the molecular oxygen of the air damages the fiber. As the plaites of the cloth retain some air, it is customary to add sodium hydrosulfite to the milk of lime in order to eliminate the action of the oxygen on the fiber. The boil is carried out at 212° F. for two hours. It is quite unnecessary to use higher temperatures in the lime boil as it only causes a greater loss of weight. This loss of weight can be reduced by using temperatures below boiling point. At 194-203° F., under a water pressure of 40-50 lbs. per sq. inch, excellent results are obtained. It has proved difficult to boil the stiff and tight linen cloth evenly in one lime boil only, therefore it is necessary after two hours boil to allow the lilquor to drain off and run the cloth through fresh milk of lime in the impregnating machine and repeat the boil, as described, in the second kier. This insures that the plaited cloth is evenly boiled throughout. In some cases a longer boil is necessary, since a shorter boil will not give satisfactory bright whites.

SOURING.—After the lime boil, the goods are washed thoroughly in a washing machine and passed through a weak solution of hydrochloric acid in an impregnating machine. The acid should be at 1 deg. Tw, and the goods passed through twice. Thus the calcium soaps and pectates formed in the lime boil are decomposed, forming calcium chloride and fatty or pectic acid. The excess of hydrochloric acid and calcium chloride can now be washed away.

OXIDATION WITH SODIUM CHLORITE.—This procedure, which certainly is the best and safest oxidation for linen, is so far connected with great difficulties in bleaching equipment, chlorite being very corrosive in acid solutions. The oxidation is carried out in a closed kier just below boiling point at pH 4.5 - 5.2, for 2-3 hours.

TREATMENT WITH HYPOCHLOROUS ACID.—Hypochlorous acid is made from bleaching powder solution by buffering it with acetic acid to pH 4.5 - 5.0, at room temperature. The cloth is impregnated in an impregnating machine with the solution containing 1-2 grams per liter of available chlorine. Three passages are required before passing the goods into a tank containing hypochlorous acid solution of the same strength and acidity as in the impregnating machine.

Allow the liquor to circulate slowly and watch carefully the total consumption of chlorine. This is the decisive stage of the process. The total consumption of chlorine for ordinary medium linen would be about 1% on the weight of the goods in the first chlorine treatment and in the second, after the soda boil, about half this amount. During the chlorine treatment the cloth does not become whiter. On the contrary, the coarser qualities, especially, become a darker reddish brown shade, owing to the fact that the small woody shivers in the yarn readily absorb the chlorine. This is a good sign, indicating that they will afterwards easily dissolve in the boiling soda solution. The chlorine treatment should not be continued for more than 1-2 hours. As the hypochlorous acid has a pungent smell a good ventilating system is indispensable. A thorough washing after the chlorine treatment is important, otherwise the calcium carbonate will be precipitated in the soda boil, which in turn would require an extra souring.

BOILING WITH SODIUM CARBONATE.—The cloth, having been oxidized with either chlorite or hypochlorous acid, is now ready for the alkaline boil which is carried out in sodium carbonate solution. The lime boil has converted flax fats to calcium soaps and pectins to insoluble calcium pectates, which after decomposing in souring leave fatty and pectic acid. These are now converted into their soluble sodium salts and the soap so formed emulsifies the unsaponifiable waxes and oils. To facilitate the emulsifying it is helpful to add to the boil liquor an effective detergent such as resin soap or fatty alcohol sulfonate. To avoid calcium precipitation a water softener such as Calgon etc. should be added. The cloth is impregnated and boiled in the liquor containing about 20 grams per liter of sodium carbonate and 5 grams per liter of sodium hydrosulfite to neutralize the remaining chlorine and the oxygen present in the remaining air. The boiling takes place at 212°F., 3 hours for lighter and 4 hours for heavier cloths is generally sufficient. After boiling, the soda lye is run off and the goods are washed in the kier and then in the washing machine and run either to the second chlorite boil in another kier or to the second chlorine treatment in the impregnating machine. In that case an alkaline hydrogen peroxide boil concludes the procedure.

OXIDATION WITH HYDROGEN PEROXIDE.—After the second chlorine treatment the cloth is washed and impregnated with a solution containing sodium metasilicate and hydrogen peroxide, together with some sulfate of magnesia as stabilizer. It is convenient to make a stock solution of the metasilicate by adding caustic soda to water glass. The alkalinity of the bleaching solution should be 2 grams per liter calculated as NaOH, and the strength of hydrogen peroxide about 1/3 per cent by volume. pH of the solution is 11.6 at the beginning dropping to about 10.7 at the end of the oxidation. The temperature is raised quickly to 175°F. and then slowly to 190°F. Bleaching is complete in about four hours. Finally the cloth is washed, opened out, mangled and dried. The whole bleaching procedure requires about 24 hours.

We illustrate the above by the following examples from practical operation:

Example 1

1100 lbs. table damask woven of raw and boiled yarn, 50 lea warp, 70 weft, 90 ends and 136 picks per inch, width 64 inches, weight per sq. yard 7½ oz.

1. Impregnate hot with 70 lbs. dry slaked lime, 6 lbs. sodium hydrosulfite, fill kier from below, regulate pressure to 50 lbs. per sq. inch, heat to 203°F. and allow to circulate for two hours. Then drain off.
2. Reimpregnate with 20 lbs. dry slaked lime, 2 lbs. sodium hydrosulfite, run the cloth to a second kier and boil as above for two hours.
3. Wash and sour with hydrochloric acid at 1 deg. Td., two ends.
4. Wash again and impregnate with 20 lbs. sodium chlorite, 13 lbs. sodium acetate, 2 liters acetic acid, plait into the kier and oxidize at 185°-200°F. for 1-2 hours.
5. Wash off and impregnate with 90 lbs. sodium carbonate, 20 lbs. sodium hydrosulfite, 9 lbs. resin soap, 2 lbs. Calgon. Boil at 212°F. for 3-4 hours, wash well and
6. Impregnate with 8 lbs. sodium chlorite, 13 lbs. sodium acetate, 1 liter acetic acid, scour in closed kier just below boiling point for 1-2 hours and then wash off.

Example 2

1000 lbs. sheeting woven from ½-bleached yarn, 30 lea warp, 40 weft, 56 ends and 61 picks per inch, width 68 inches, weight 7½ oz. per sq. yard.

1. Impregnate and boil as previously stated with 33 lbs. slaked lime, 6 lbs. hydrosulfite.
2. Boil again as above with 16 lbs. slaked lime, 2 lbs. hydrosulfite.
3. Wash off and sour with hydrochloric acid at 1 deg. Tw., 2 ends.
4. Wash again and impregnate in 3 passages with bleaching powder solution containing 1 gram per liter of chlorine and 2 grams per liter acetic acid. Watch until the chlorine consumption reaches 4 lbs., if necessary continue the chlorine treatment in a tank.
5. Wash thoroughly and impregnate with 60 lbs. sodium carbonate, 20 lbs. hydrosulfite, 9 lbs. resin soap, 2 lbs. Calgon, boil for 4 hours at 212°F.
6. Wash and impregnate with 28 lbs. dry metasilicate, 2 lbs. sulfate of magnesia, 10 lbs. hydrogen peroxide 40%, raise temperature to 175°F. and then slowly to 190°F., and oxidize for 4 hours before washing off.

Anyone knowing the difficulties of the old grassing method, with its enormous requirements of labor, should be highly satisfied in accepting such a speedy method, which at the same time has no harmful effect on the cloth. Chemical control has shown that damage to the cloth is theoretical only, having no influence upon resistance to wear.

Quality Control

A very good and reliable control method is the Solubility number system devised by Nodder, *Journal of the Textile Inst.* 1931. Nodder states that a linen damask or sheeting if carefully bleached to a full white by normal processes has a solubility number of about 6. Solubility numbers greater than 8 for this class of material are highly undesirable from the point of view of resistance to wear, while solubility numbers greater than 10 must be regarded as indicating definitely unsatisfactory bleaching. The normal solubility number of raw flax is usually between 2-3. Bleaching made by the method described above generally gives numbers between 3-4, the lime-chlorite method giving slightly better quality numbers than the lime-hypochlorous acid-hydrogen peroxide method.

Summary

The bleaching process of linen piece-goods is described. To avoid mechanical damage the process has been made as short as possible. The speed of the cloth in washing machines should not exceed 80 yards per minute. The goods must be well saturated with the necessary solutions before and during treatment. First class full whites cannot be obtained without lime boil, but this can be carried out below boiling point by using water pressure in the kier. All alkali boilings are carried out in strongly reducing solutions. It is preferable to oxidize in acid solutions, and therefore the chlorite oxidation method gives better quality figures than the hydrogen peroxide method, which must be carried out in alkaline solution. Hypochlorite is also used in an acid solution at pH 4.5-5.0. The hydrogen peroxide bath has a pH-value of 11.6-10.7. Magnesium salt is used as stabilizer. The process takes scarcely 24 hours and gives excellent quality which is controlled by means of Nodders Solubility number test.

ABSTRACTS

Industrial Applications of the Sodium Silicates, Some Recent Developments

Reynold C. Merrill, Industrial and Engineering Chemistry, page 337, Vol. 41, No. 2, February, 1949.

Within the past 25 years it has become recognized and established by both laboratory studies and practical experience that silicates, as well as soaps, are good detergents and that a mixture of the two is often better for many cleaning purposes. Mixtures of soaps and silicates have been shown to be as good or better than either alone at preventing the deposition or redeposition on cotton of thirteen different types of soils under conditions closely approximating actual laundry practice. In hard water, mixtures of soap and silicate, or the latter alone, are better than soap, both in removing pigments and in preventing their redeposition. As much as 40% of soap can be replaced by sodium metasilicate or a silicate with a silica to alkali ratio of 2.0 before soil removal in soft water (50 p.p.m. hardness) is decreased at all soap-mixture concentrations. Soil removal in hard water (300 p.p.m.) is considerably increased by replacing up to 40% of the soap by the metasilicate or 2.0 ratio silicate. Cotton, rayon and wild silk are washed whiter in solutions of a silicated soap than in solutions of a pure olive oil soap or a sodium salt of a sulfated alcohol; with wool the results for the two soaps are about the same. The wet strength of all fabrics except wild silk after as many as 50 washings is higher for the silicated soap. The increased detergent action of synthetic detergents when silicates are added is often much greater than with the soaps. Silicates of soda reduce the amount of soap required to form suds in typical hard waters. It appears that more of the siliceous silicates than any other builder tested can be added to soaps under conditions of commercial interest.

The introduction of the stable, pure, white, free-flowing metasilicate pentahydrate about 1930 and of a stable hydrated sesquisilicate about 1934 led to the present wide scale use of silicates of soda for detergent purposes. The alkalinity of the silicates enables them to neutralize or saponify dirts such as fats, oils, paints and some proteins which then become water-soluble or dispersible. Their high buffering capacity enables them to maintain approximately the same pH in the presence of acidic material or on dilution. The sequestering action of sodium hexametaphosphate, sodium tetraphosphate, and tetrasodium pyrophosphate is greater for both calcium and magnesium hardness at 140 and 200°F. in the presence of metasilicate or sesquisilicate than with caustic soda, soda ash or trisodium phosphate. Uses of silicates in the textile industry include the following: kier boiling, bleaching, back gray washing, soaping of prints, scouring rayon, wool, yarn and other fabrics, and silk weighting. The sequisilicate may also be used for the partial saponification of acetate rayon and the metasilicate may be used for wool scouring under careful control. For degumming silk a combination of one of the organic wetting agents with silicates is preferable to soap alone or soap in combination with other alkalies.

Other subjects discussed in this paper include the use of silicates as adhesives, in metal cleaning, cements, briquets and bonded materials.

Evaluation of Ternary Mixtures Synthetic Detergent—Soap-Builder

J. J. Morrisroe and R. G. Newhall, Industrial and Engineering Chemistry, page 423, Vol. 41, No. 2, February, 1949.

The effect of electrolyte builders on mixtures of synthetic detergent and soap are examined. It has been shown that such ternary mixtures possess properties that cannot be equaled with binary mixtures of soap-builder or synthetic detergent-builder. The synthetic detergent used was a representative sample of a commercial product containing 40% active ingredient (an alky aryl sulfonate of approximately 352 molecular weight) and 60% sodium sulfate. Sodium stearate was chosen as a soap. Water of 300 p.p.m. hardness (200 as calcium and 100 as magnesium) was used in all tests. The work was limited to the measurement of detergency, foaming and pH.

The pH measurements were made with a Beckman Model G laboratory pH meter at 25°C. in hard water. No correction was made for sodium ion error. Foaming was measured according to the method of Ross and Miles (Ross, J. and Miles, G. D., *Oil & Soap, 21,* 170 (1944). The efficiency of the detergent was measured by washing soiled cloth in a Launder-Ometer. The following soiling solution was used: 20 grams of acidless tallow, 72 grains of white mineral oil, 8 grams of lampblack, 3785 ml. of carbon tetrachloride. To determine the amount of soil removed, the reflectance of the cloth before and after washing, as well as that of the unsoiled cloth, was measured with a Photovolt reflectometer, Model 610. The increase in reflectance is given by the difference between the reflectance of the washed and unwashed cloth, divided by the difference between the reflectance of the soiled and unsoiled cloth, as in the following equation:

$$\text{Detergency} = \frac{R_3 - R_2}{R_1 - R_2} \times 100$$

where R_1 is the reflectance of the unsoiled cloth; R_2 is the reflectance of the soiled cloth before washing; and R_3 is the reflectance of the soiled cloth after washing. A reference standard, consisting of duplicate swatches washed in 0.2% sodium stearate solution, was included in each Launder-Ometer run.

Results of the investigations are detailed by means of tables and graphs.

The Combination of Wool with Acids—A Quantitative Interpretation in Terms of the Donnan Theory of Membrane Equilibrium

L. Peters and J. B. Speakman, Journal of the Society of Dyers and Colourists, page 63, Vol. 65, No. 2, February, 1949.

The authors' summary follows:

A quantitative interpretation of the combination of wool with hydrochloric acid, sulfuric acid, and hydrochloric acid in presence of different concentrations of potassium chloride has been obtained in terms of the Donnan theory of membrane equilibrium. The course of combination is determined by the pH inside the fiber, which can be calculated although it is incapable of direct measurement. When the amount of combined acid is plotted as a function of the "internal" pH, the midpoint of the titration curve is found to

lie between pH 4.15 and 4.35 in the case of hydrochloric acid, as would be expected if combination were due to back-titration of the carboxyl groups of salt linkages. Similarly in the case of sulfuric acid the mid-point is at pH 4.45, and the unification of the hydrochloric acid and sulfuric acid titration curves, as well as the agreement between the observed and expected pK values, affords strong evidence in support of the Donnan theory. In addition, it has been shown that the curves obtained by titrating wool with hydrochloric acid in presence and absence of potassium chloride, the amounts of potassium chloride being sufficient to give a constant chloride ion concentration, are unified when the amounts of combined acid are plotted against the calculated "internal" pH values. The Donnan theory also provides a precise interpretation of the manner in which the pH corresponding to half-maximum combination with acid varies with changing salt concentration.

The Degradation of Cotton During Atmospheric Exposure, Particularly in Industrial Regions

E. Race, Journal of the Society of Dyers and Colourists, page 56, Vol. 65, No. 2, February, 1949.

Purified cotton yarn was exposed during the summer of 1947 in an agricultural region of southwest England from May to September and samples tested every fourth week. Determinations showed that the rate of loss in strength was constant and greatest during the first eight weeks. After a loss of approximately 40%, the rate decreases considerably. The fluidity curve approximates a straight line up to twelve weeks exposure and thereafter increases only slowly. The rapidity with which glycosidic linkages are ruptured in the early stages of exposure is demonstrated. There is a gradual almost linear increase in copper number which denotes the steady production of reducing groups during the exposure of the cotton. The greater proportion of reducing groups has arisen from oxidation of hydroxyl groups rather than from cleavage of glycosidic linkages. There is evidence of a slight increase in the carboxyl content of the cellulose during exposure, suggesting that a limited oxidation of aldehyde groups has occurred.

Tests indicated that yarn exposed in industrial areas underwent greater degradation in the winter than in the summer. A series of further tests was carried out in which the breaking strength of yarn was measured every calendar month throughout the year, with similar results. The smallest loss of strength occurs in spring and autumn. The factor influencing the greater loss of strength in the winger is the greatly increased acidity of atmospheric moisture in winter compared with that in summer. It is considered that degradation in summer is due to the action of ultra violet radiation and atmospheric oxygen; degradation during winter is due to the joint action of ultra violet radiation, atmospheric oxygen, and acid. During spring and autumn the action of the sun is less than during summer and the action of atmospheric acidity is less than during winter.

The much greater atmospheric acidity in industrial regions in winter is mainly due to the greater discharge into the atmosphere of sulfuric acid fumes and to industrial fog which is invariably confined to the winter months, accompanied by a stillness of the atmosphere and a settling of acid.

The Application of Organosilicon Polymers to Wool

P. Alexander, D. Carter and C. Earland, Journal of the Society of Dyers and Colourists, page 107, Vol. 65, No. 3, March, 1949.

The authors' summary follows:

It is known that wool can be made non-felting by building up a film of polymer on the surface of the fibers to mask the scales known to be responsible for shrinkage. Organosilicon polymers were investigated for this purpose because these polymers can be produced from very reactive monomers, giving rise to chemically anchored polymers; also by using monomers with similar chemical reactivities, plastics of widely different physical properties can be produced. To obtain non-feltability with a deposit of less than 5% (I) the polymer must be produced from a monomer containing a reactive grouping such as Si-Cl; groupings such as Si-OC_2H_5 and Si-NH_2 not being satisfactory; and (II) the polymer must be a hard solid; oils, rubbers, and waxes not being effective. Evidence is advanced which shows that initially the polymer is anchored to the fibers via -Si-NH- linkages; although this bond is hydrolized by water, it serves the purpose of producing an oriented deposit of polymer on the surface of the wool fibers.

Preparation, Dyeing and Finishing of Fibro Fabrics

R. A. McFarlane and C. C. Wilcock, Journal of the Society of Dyers and Colourists, page 145, Vol. 65, No. 4, April, 1949.

Fibro is the viscose rayon staple produced by Courtaulds Ltd. and this paper is concerned with the preparation, dyeing and finishing of all-Fibro fabrics, although Fibro is used considerably in combination with other fibers.

The preparatory treatment will depend mainly on the type of size used on the warp and on the extent of contamination as the yarn, as supplied, contains only a lubricant which is removed by a light scouring treatment. There is a discussion of the removal of the sizes and the subsequent scouring. Three examples of methods of desizing and scouring, which have given satisfactory results in commercial practice, are outlined.

Most Fibro fabrics are still piece-dyed with direct cotton dyes and this paper is limited to a discussion of this class of dye and deals with (1) the selection of dyes and the practical dyeing procedure used for their application and (2) the effect of the mechanical conditions used during their application. The successful application of these dyes to Fibro fabrics depends mainly on these two factors.

It is preferable to add any softening agent required to the last rinse water, after dyeing, rather than at some later stage. Usually only a small amount of softening agent is required. After being softened the fabrics are hydroextracted or suctioned. Whatever method of drying and tentering is employed, the fabrics should be allowed to cool and condition before examination or carrying out any further processes. There is considerable discussion on various special finishing treatments.

The Treatment of Wool with Acid Permanganate Solutions

P. Alexander, D. Carter and R. F. Hudson, Journal of the Society of Dyers and Colourists, page 152, Vol. 65, No. 4, April, 1949.

The authors' summary is as follows:

It is shown that wool can be rendered non-melting by treatment with dilute solutions of permanganate at a pH<2, and the optimum conditions for treatment are described. Wool treated in this way does not felt when left even for very long periods in a washing machine, but felts as much as untreated wool when exposed to a milling action. Wool which has received prolonged permanganate oxidation treatment acquires some resistance to felting in a mill. Permanganate-treated wool shows no resistance to felting when washed in acid in a washing machine or a mill. The implications of these results for the theory of felting are discussed.

The damage done to the wool by permanganate treatment is slight and has been assessed in a number of different ways. The nature of the reaction has been studied from an analytical and a kinetic viewpoint, and it is shown that the chief reaction is an oxidation of the disulfide bond, the rate being controlled by diffusion.

There is a fundamental difference between the actions of acid and alkaline permanganate. A secondary reaction with tyrosine is responsible for the yellowing of wool. The yellow complex is shown to behave as an indicator.

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ANNUAL OUTING
NEW YORK SECTION
JUNE 17, 1949
See report in
July 11th issue

BATHER'S VIEW OF THE ATLANTIC CITY BEACH-FRONT SKYLINE. Large building at the far right is the Chalfonte-Haddon Hall, headquarters for the 28th National A.A.T.C.C. Convention, October 13, 14 and 15.

ATLANTIC CITY CONVENTION NOTES

LADIES are invited to join their husbands at the 28th National Convention of the American Association of Textile Chemists and Colorists, to be held October 13-14-15 at Atlantic City, New Jersey, famed seashore resort.

The convention committee is arranging for a special program for the feminine contingent, to afford some pleasure during the periods when the men are attending technical sessions or touring the exhibits. Richard L. Jones, of the Royce Chemical Co., is chairman of the convention ladies' committee.

After registering on Thursday, October 13, ladies are invited to attend a late-afternoon cocktail party on the first day of the convention. Present plans call for a fortune teller to be in attendance at the party, for those who seek a forecast of the future. There will be movies in the hotel's private theater that evening for the ladies, starting at 8:00 P.M.

Ladies arriving on Friday, October 14, will register in the morning and there will be a late afternoon tea for all ladies, highlighted by a special fashion show. The hotel will provide evening entertainment.

Saturday morning will be free, as will the afternoon, while the wind-up convention banquet will be held in the evening, with ladies invited. Dancing will follow.

Those planning to attend the Atlantic City convention are again reminded by the committee that hotel reservations must be made on the official A.A.T.C.C. Convention form, which will be mailed to all members in the near future.

* * * *

Descriptive pamphlets on "places to see" in Atlantic City also will be mailed to members shortly, while the program, now being compiled, also will be sent out in the near future.

Membership Applications

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(Concluded on Page P562)

Outing, Mid-West Section

THE annual outing of the Mid-West Section was held at Lake Lawn, Delavan, Wisconsin, on June 18, 1949, and was attended by 158 members and guests.

In the morning a ball game was played between the salesmen and millmen. Bill Fischer's home run in the fifth inning decided the game in favor of the millmen, 11-10.

The majority of the members, after an early lunch, headed for the golf course, while others entered the ping-pong or horseshoe tournaments.

In the evening, after an excellent dinner, the golf trophies were first awarded by A. T. Brainerd. Both the Fadeometer and Millmen's trophies for 1st, low gross and 1st low gross—millmen—were won by Bob Anderson, who was persuaded to retire them. Bob has graciously offered to furnish a new trophy for one of next year's awards. L. B. MacFarland, chairman, assisted by his committee members, then proceeded to award prizes to the members and guests for their participation in the events of the day.

GOLF WINNERS

Fadeometer Trophy (1st low gross). Won and retired by Bob Anderson—76.

Millmen's Trophy (1st low gross—millmen). Won and retired by Bob Anderson—76.

Salesmen's Trophy (1st low net, millmen). Louis Blank—104-42-62.

Members: 1st low gross. 73—Bob Anderson.

2nd low gross. 77—Ken Harms tied with Elmer Smith.

Guests: 1st low gross. 77—Ellis Gurry.

2nd low gross. 80—Jim Heisler.

Members: CLASS A

1st low net. 86-21-65—Gordon Scott.

2nd low net. 88-21-67—Dave Anderson.

CLASS B

1st low net. 92-27-65—Earl Schroeder.

2nd low net. 92-27-65—P. F. Willgeroth.

CLASS C

1st low net. 99-30-69—Harry Proudfoot.

2nd low net. 100-30-70—Al Olson.

CLASS D

1st low net. 104-42-62—Louis Blank.

2nd low net (tied) 129-66-63—Hugh McKenna; 180-117-63—Henry Volk.

Guests: 1st low net. 118-57-61—E. Hanns.

2nd low net. 118-54-64—K. Fitzgerald.

3rd low net. 82-18-64—S. Gross.

4th low net. 110-45-65—W. Johnson.

(Peoria handicapping system)

HORSESHOES

Doubles winners: Charlie Robbins, Jim O'Malley.

Singles—1st. Len Mayfield. 2nd. Wilson Smith.

PING PONG

1st. R. R. Fisher.

2nd. Frank Beverly.

The members of the outing committee, headed by L. B. MacFarland, should be congratulated for a job well done and for making this outing a great success.

Respectfully submitted,

WILLIAM BOYD, JR.
Secretary.

—♦ ♦—

Outing, Philadelphia Section

THE Philadelphia Section held its Annual Outing on Friday, June 10th at the Whitemarsh Valley Country Club, Chestnut Hill, Pa.

A perfect day, clear and sunny, found 350 members and guests enjoying a day of golf, quoits, darts, cards and good fellowship.

Tom Jordan of W. H. & F. Jordan Jr. Mfg. Co. won the Philadelphia Section Golf Cup for the third time with a low gross score of 78. R. M. Wilson of National Aniline Division carried off low net honors. Robert Black of Proctor & Schwartz took first prize for low gross for guests, while low net for guests was won by J. Doerr of Philadelphia Carpet Co.

Morgan Humphreys of the Delta Co. won the "Hole-in-one" contest by hitting the ball within three inches of the cup.

At cards, the team of Norman High and Norman Snyder of Spring City Dye Works, won first prize; quoits were won by the team of N. A. Greenawalt and Wm. Chappel of Wolfe Bleach & Dye Works, and darts by G. J. Littlewood, 3rd, of G. J. Littlewood & Co.

During the excellent dinner, Tom Moorehead of WFIL conducted his daily sportscast and interviewed some of our members, among whom were Art Gordon, Martin Fabrics Corp., Dick Stehle, Allegheny Dye Works, and Jim Dixon, Calco Chemical Div.

A fine floor show followed to fill out a very enjoyable day. A. H. Seitz, American Aniline Products and John W. Jordan of Alco Oil & Chemical Corp. were co-chairmen of the committee which did such an excellent job in making this outing one of our most successful.

Respectfully submitted,

THOMAS H. HART,
Secretary.

—♦ ♦—

S. C. Outing to Be Held September 9-11

THE 1949 Summer Outing of the South Central Section will be held at the Lookout Mountain Hotel, Chattanooga, Tennessee, on September 9, 10 and 11.

Outing, Northern New England Section

THE 24th annual outing was held on a perfect June day at the Andover Country Club, Andover, Massachusetts, with a record number attending. Golf, softball, horse shoe pitching, bridge and cribbage were enjoyed.

There was little doubt that the most active sport was golf in which the greatest number participated. The customary humorous heckling occurred over handicaps. As usual, Al Grant of Pacific Mills, although not a heavy hitter, exhibited amazing prowess in approach shots and on the greens and won First Low Gross in the "A" Division thereby retaining the cup for another year. Other winners in the "A" Division were John Bryant, Phil Graham, John Grady, Herb Wieland, Bill Turner and Warren Dewing. In the "B" and "C" Divisions the First Low Gross prizes went to Safford Sweatt and Charles Kopatch, respectively.

Perhaps the most interesting sport from the spectators' point of view was the softball game. Captain Murphy and his A.A.T.C.C. Red Sox were the winners and received a number of handsome prizes for their efforts. The hardest working man on the field was Pat Crowley, the umpire, who had great difficulty in keeping the game in order between the hot sun and the kibitzing onlookers.

Horse shoe pitching attracted many of the older members. H. Walx, John Markerson, and Dan Ardito were winners.

The indoor sports included bridge and cribbage which were enjoyed in the cool quietness of the club house. George Mandikos, one of our A.A.T.C.C. Research Assistants, and Henry de Redon of the Ciba Company, New York, were the winners at bridge. Harlan Glidden, Research Associate of the A.A.T.C.C. and John Burnett were winners at cribbage.

After the social hour from 6:00 to 7:30, a very delicious dinner was served.

24th Annual Outing

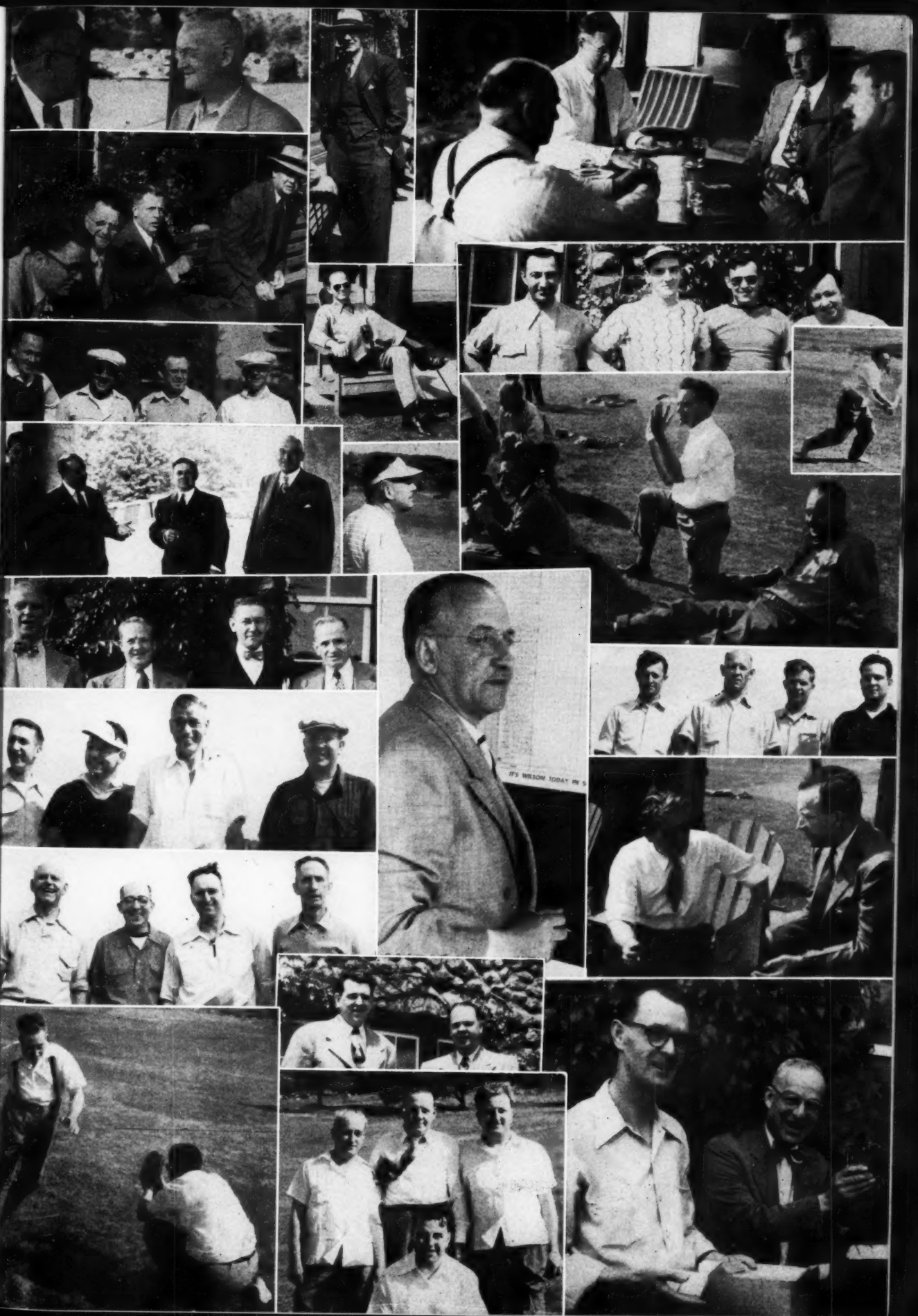
Northern New England

Section

June 10, 1949

Andover Country Club

Andover, Mass.


IT'S WISOM TODAY IN S

CALENDAR

SOUTH CENTRAL SECTION
Outing: September 9 to 11 (Lookout Mountain Hotel, Chattanooga).

PHILADELPHIA SECTION
Meetings: September 16, November 11 (Kugler's, Philadelphia).

PIEDMONT SECTION
Meeting: November 5 (Charlotte Hotel, Charlotte, N. C.

HUDSON-MOHAWK SECTION
Meetings: September 16, November 18.

COUNCIL
Meetings: September 9 (The Warwick, New York), December 9 (New Yorker, New York).

RESEARCH COMMITTEE
Meetings: Sept. 9, Dec. 9.

NATIONAL CONVENTIONS
1949: October 13 to 15, Chalfonte-Haddon Hall, Atlantic City.
1950: September 28 to 30, Portsmouth, N. H.
1951: October 18 to 20, Statler, New York.
1952: Boston.

EMPLOYMENT REGISTER

This column is open for four insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information from the Secretary.

49-16

Education: Chemist.

Experience: Dyer, hosiery.

Age 54; married; references. Southern U. S. preferred.

6-27, 7-11, 7-25, 8-8

49-17

Education: New Bedford Textile Institute.

Experience: 16 years chemist, dyer and head dyer, cotton and rayon.

Age 40; married; references. Eastern U. S. preferred.

6-27, 7-11, 7-25, 8-8

49-18

Education: B.S., Mass. Inst. of Tech.; further courses elsewhere.

Experience: Textile chemical, laundry and garment analysis, including executive and sales service work.

Age 41; married; references; now located in middle west.

6-27, 7-11, 7-25, 8-8

49-1

Education: B.T.C., Lowell Textile Institute.

Experience: Laboratory technician, cost research, quality control, following army service.

Age 26; married, references.

7-11, 7-25, 8-8, 8-22

49-19

Education: B.S., Texas Tech. College, Chem. & Dye.

Experience: Cotton finishing.

Age 31; married; references; Southwest preferred.

7-11, 7-25, 8-8, 8-22

49-20

Education: B.S. in Textile Chemistry.

Experience: Textile Chemist and Colorist.

Age 32; married; references; New England preferred.

7-11, 7-25, 8-8, 8-22

49-21

Education: Graduate, textile technology, New York State Inst. of Applied Arts & Sciences, classs valedictorian.

Experience: summer work during education.

Age 23; unmarried; will go anywhere.

7-11, 7-25, 8-8, 8-22

—♦ ♦—

Outing, Western New England Section

THE Annual Outing and Golf Tournament of the Western New England Section was held on June 24th at the Wallingford Country Club, Wallingford, Connecticut. "Eddie" Edelstein, The Pond Lily Co., did his usual excellent job as Chairman of the Outing Committee.

The feature of the outing was the golf tournament and many also joined in pitching horseshoes, playing darts and card games. Following the dinner in the evening, served at Long Hill Inn, the following prizes were awarded for golf:

Low Gross, Member—J. Diamond, Talon Co., (85).

2nd Low Gross, Member—J. Edward Lynn, American Cyanamid Company (96).

Low Gross, Guest—C. Lakey, Jacques Wolf & Co. (90).

2nd Low Gross, Guest—R. Secord, E. I. du Pont de Nemours & Co. (92).

Most Birdies—Robert Farwell, E. I. du pont de Nemours & Co. (3).

Nine 5's—Claude Allard, Naugatuck Chemical Division, U. S. Rubber Co.

Nine 6's—Ray Carey, General Dyestuff Corp.

Eight 7's—Socrates Vaniotis, Sidney Blumenthal & Co.

Kickers—(1st) Herman Steen, Geigy Company, Inc.—107-25-82; (2nd) Robert N. Brownlee, U. S. Rubber Co.—110-46-64; (3rd) Nat Glade, American Cyanamid Co.—110-33-77; (4th) R. Fitzgibbon, Ciba Company, Inc.—103-25-78.

High Score—W. H. Espelin, Ciba Company, Inc. (130).

Low Blind Hole—W. Howell, Hercules Powder Co.

High Blind Hole—"Eddie" Edelstein.

Putting Contest—Stan Hoffman, Hat Corp. of America (20—ten holes).

Golf Pro's Kickers—W. Curtin, Naugatuck Chemical Division, U. S. Rubber Co.

Fewest Holes Played—E. Otto, Lee Hat Co.

Prizes were awarded in darts to Ralph Pezet, Mallory Hat Co. (330) and in horseshoes to Si Simon, Chicopee Manufacturing Co. and E. London.

Other prizes were awarded to: Charles Hollendbach, Althouse Chemical Co.; Harold H. Taylor, Sidney Blumenthal & Co.; Norman Vaniotis, Sidney Blumenthal & Co.; Frank Peterson, Sidney Blumenthal & Co.; Frank Desanto, Housatonic Dyeing and Printing Co.; E. Vagnini, Housatonic Dyeing and Printing Co., W. A. McCann, American Fabrics Co.; John Spalding, American Fabrics Co.; John Hirn, National Aniline Division, Allied Chemical & Dye Corp.; Norman Johnson, *American Dyestuff Reporter;* Ernest Johnson, American Felt Co.; John Hood, American Cyanamid Co.; Art Nyquist, American Cyanamid Co.; Ed Schuman, American Cyanamid Co.; R. W. McGaughey, Tingue Mills; John B. Dick, Pond Lily Co.; Jack Ryan, Beaver-Goodman; Dave Lowry, Penick and Ford; E. Keach, E. I. du Pont de Nemours & Co., Inc.; Bernard Lustig, Lawrence Richard Bruce; E. Sweetman, E. I. du Pont de Nemours & Co., Inc. and Joe Melody, Norwalk Hat Co.

Annual Outing
and Golf Tournament
Western New England
Section
June 24th
Wallingford Country Club
Wallingford, Conn.

ONE HUNDRED AND SIXTY-SEVENTH COUNCIL MEETING

THE Council held its 167th meeting in the Hotel Warwick, New York, N. Y., on Thursday morning, June 9, 1949. Present were President Henry F. Herrmann, presiding; C. Norris Rabold, Vice President; William R. Moorhouse, Treasurer; William H. Cady, Carl Z. Draves and P. J. Wood, Past Presidents; J. Robert Bonnar, Chairman of the Research Committee; Howard L. Jenkins, George O. Linberg and Frank J. O'Neil representing Northern New England; Harold H. Taylor representing Western New England; Raymond W. Jacoby, Robert W. Joerger and George H. Wood representing Rhode Island, Charles W. Dorn, Herman E. Hager, William A. Holst, Jr., and Herman E. Wilde representing New York; Walter F. Fancourt 3rd, Onslow B. Hager, M. H. Klein, Lloyd O. Koons and Frederick V. Traut representing Philadelphia; Wyss L. Barker, John B. Neely and Raphael E. Rupp representing Piedmont; Jack Anderson representing South Central; A. Kempton Haynes and Walter M. Scott representing Southeast; Kenneth H. Barnard of the Convention Committee; Samuel L. Hayes; Patrick J. Kennedy of the Intersectional Contest Committee; Leonard S. Little of the Corporate Membership Committee; Paul J. Luck and George H. Schuler of the Publicity Committee; J. Edward Lynn, Chairman of the Western New England Section; Harold W. Stiegler, Research Director; Percival Theel of the Publications Committee; and Harold C. Chapin, Secretary.

The Secretary's report of the 166th Council meeting and financial report of May 31, and the Treasurer's report of June 1, were accepted. The budget prepared by the Appropriations Committee for the fiscal year beginning Aug. 1, 1949 was approved.

Bearing the necessary signatures, the following was proposed for adoption as a substitute for Article VIII, Section 1, of the Constitution, on the election ballot of the coming fall.

"Amendments to this Constitution may be proposed in writing, signed by twenty-five or more Senior members, and presented, at any time, to the Secretary of the Association. Such proposals shall be submitted to the Council at its next meeting and shall be published in the Proceedings of the Association, with the recommendations of the Council, in the next available issue of the *American Dyestuff Reporter*. Within one month thereafter the proposed amendment shall be submitted to the entire membership by letter ballot. Approval by two-thirds of the ballots, marked and returned in one month after the mailing, shall make the proposed amendment effective at once."

This was opposed in the meeting by Mr. Barker, on the ground that it did not provide adequate consideration of future amendments before their adoption. Without further debate it was referred to a committee consisting of L. S. Little, J. R. Bonnar, W. H. Cady, H. C. Chapin, C. W. Dorn, C. Z. Draves, W. R. Moorhouse, C. N. Rabold, T. R. Smith and P. J. Wood, who were to report on this and other suggested changes in the Constitution at the September Council meeting.

There was presented a letter from the Howes Publishing Company offering to endow in memory of Alfred P. Howes an annual prize of $200 for the best paper presented before a local Section and published in the Proceedings of the Association. This was accepted with thanks, and the Publications Committee was asked to confer with the Howes Publishing Company regarding further arrangements. Framed resolutions from the Howes Publishing Company in memory of Dr. Olney were accepted with thanks for location with the Olney Library. It was announced that Charles A. Seibert would receive the Olney Medal Award of this year.

The President and Research Director reported on the Association's exhibit in the Textile Wet Processing Exhibition then in progress; and Mr. Dorn on the further showing of the exhibit before the convention of the National Retail Dry Goods Association on June 21, also on collaboration with that Association in the preparation of a buyer's guide.

For the Research Committee Mr. Bonnar stated that a report on laundry procedures would be out in about a month. It was hoped this would assist more uniform laundry practice, on which to base laboratory tests simulating laundry treatment. Charles A. Seibert had been appointed representative on the A.S.A. committee on finishing of rayon fabrics, with C. W. Dorn and W. G. Helmus as alternates. A.A.T.C.C. test methods accepted and numbered by the A.S.A. would appear with these numbers in the coming Year Book. More systematic collaboration with the A.S.T.M. on test methods was in progress. By a group of rayon yarn producers a contribution of $2000 has been made to the Association for work on flammability tests. In development of international standards, wash fastness tests were being run in collaboration with the Netherlands. Advisory committees had been appointed in the Western New England and Hudson Mohawk Sections. Professor Theel had been appointed Chairman of a reference committee on analytical methods.

Having served one year as Chairman of the Executive Committee on Research, Mr. Bonnar had again been elected Chairman by the Council, for a term of three years beginning in January, 1947, despite a By-law limiting the term to three years consecutively. Because the Committee had planned in good faith for the continuation of Mr. Bonnar's term through 1950, it was recommended by vote of the meeting, that extension of his term through the year 1950 be validated by letter ballot of the Council, in the manner prescribed for amendment of the Bylaws.

For the Publications Committee Professor Theel reported that the new "Analytical Methods for a Textile Laboratory" would be out in July. Reprints of the "Notice to Authors of Papers", for guidance in preparing of papers for the Reporter, were available from the Secretary. Mr. Jacoby hoped that the monograph on vat dyeing would be ready for the printer by the end of the year. The committee recommended that a paid editor be appointed to edit papers for the Proceedings with assistance of the Editorial Board and group of technically qualified readers, and to secure more and better papers for meetings and publication. A proposal regarding the filing of sealed communications, made at the March Council meeting, was rejected on advice of an attorney.

Mr. Cady reported progress on financial arrangements for publication of the new *Colour Index*. Purchase of more copies of the old Index and Supplement for resale was approved.

For Professor Lindsay's Committee on Student Awards, P. J. Wood showed the book plate designed by himself, and stated that awards were in progress in all institutions having Student Chapters of the Association.

For the Corporate Membership Committee Mr. Little reported a substantial increase in dues for the support of research, but a continuation of the campaign for more. A progress report on research was about to be mailed to Corporate Members.

Mr. Fancourt reported that twenty-six exhibitors had already reserved space at the Atlantic City convention. A train would be run direct from New England to the convention, with another from the South and West should there be enough applicants. It was hoped that the technical program nearing completion under chairmanship of Mr. Etchells would be ready for mailing with reservation cards in July. Rooms in the Chalfonte-Haddon Hall would be released only through the Philadelphia committee. Mr. Kennedy said that ten Sections were working on Intersectional Contest papers. The new rules drawn by his committee and to be printed in the *Reporter* were approved.

Mr. Jacoby announced the appointment by the Rhode Island Section of George H. Wood to manage the convention of September 28 to 30, 1950, in Portsmouth, N. H. The Council approved conventions in New York City in 1951, and Boston in 1952.

New York City, on September 9, was confirmed as place and date of the next Council meeting. With approval of the Council the President appointed K. H. Barnard, J. R. Bonnar and F. L. Bume to arrange for meetings of the Council and Research Committee in Montreal in June, 1950.

For the Committee on Membership and Local Sections, Mr. Rabold recommended approval of a Student Chapter in the New York State Institute of Applied Arts and Sciences of Utica, N. Y., which was voted. Elected to Corporate membership were David Gessner Co., J. P. Stevens & Co., Inc., and Victor Chemical Works. Each of the following was elected to the class of membership specified, as of thirty days from publication of application, provided no objection be received meanwhile by the Secretary.

Senior

J. W. Adams
W. M. Allison
A. G. Antoniotti
W. R. Armstrong
J. H. Bailey
G. S. Barker
C. R. Bellwood
R. C. Blume
R. F. Bowen
F. G. Braunfels
A. F. Budzynkiewicz
J. I. Carr
J. C. Cavin
W. E. Chapman
J. S. Cole
F. V. Crotta
G. M. Cunningham
D. D'Amico
R. G. Davidson
R. L. Dawson
W. J. Ehrlenbruch
J. E. Ernst
M. A. Feger
H. A. Friedel
A. Fusaro
H. A. Gast
A. H. Glass
F. Habersberger
B. F. Hand
I. M. Hicks
E. A. Hoffman
E J. Huber
J B. Hyman
A. F. Johnson
R. M. Jones
M. Kammermann
F. W. King
J. E. Knight
P. Kovac
W. L. Kratz
W. Krayer
F. E. Loomas
N. R. MacLagan
R. Marshall
J. N. McJunkin
C. P. McHugh
W. J. McKenna
C. M. Mueller
R. T. Mullin
I Noren
A. R. Nuno
R. H. Olney
B. B. Pearson
L. M. Phillips
A. Picciotti
H. L. Richey
S. M. Roberts
P. R. Scherrer
A. R. Sims
S. B. Sladen
C. A. Sledge
G. M. Smith
H. O. Smith
H. C. Speel
A. Tashman
B. Tatum
O. C. Thompson
J. D. Todd
R. Tull
J. Turer
B. W. Walker, Jr.
O. E. Wasser
R. Weinstein
A. Weisshaar
H. Welburn
W. L. White
H. W. Wilkinson, Jr.
E. Wilson
D. G. Zachary

Junior

J. D. Beam, Jr.
E. W. Boles
M. C. Borden
M. W. Chappell
R. A. Cole
T R. Devitt
D. E. Gamble
B. H. Hood
T. P. Innes
W. J. Jutras, Jr.
M. L. Murchison, Jr.
T. Pilblad
F. T. Roberts
R. A. Schoellhorn
L. E. Sells
W. C. Sheehan
R. C. Swindells
G. E. Wilson, Jr.
J. S. Wood

Associate

R. Buron
A. S. Davidsohn
J. B. Egee
C. K. Everett
J. M. Gallagher
F. K. Gammons
A. Garavaglia
C. F. W. Gebelein
L. M. Goria
F. H. Ihlenburg
J. W. Jebsen
J. L. Johnson
C. Klug
F. F. Kraus
P. A. Krentel
L. T. Lawrance
R. Madella
W. H. McCann
W. V. McCrary
M. Rakvidhyasastra
C. W. Rulon
S S. Talib
J. K. White

Student

C. Arah
J. Asher
S. T. Biggers
R. D. Brassil
F. N. Buttino
A. P. Cappelli
H. Cikurel
R. G. Croucher
J. N. Demeo
A. DiMeo
P. W. Downing
F. R. Dvorak
C. Ezeji-Okoye
C. W. Fethe
W. J. Gale
W. L. Garrett
J. S. Glick
J. L. Gossett
F. Holsten
W. J. Jahelka
E. D. Jewell
O. R. Kerr
S. F. Kulewicz
M. Leader
L. R. Lefkowitz
M. Lenzer
F. P. Liston
C. J. Merlini
M. J. Michael
A. J. Moo Young
E. Murray
W. H. Muse
L. C. Nurnberg
W. H. Payne
A. J. Pendleton
J. M. Privette
J. A. Richards
F. P. Rizzuto
W. B. Robertson
M. Romer
R S. Sarfaty
R. L. Sherman
M. T. Spahi
C. P. Van Name, Jr.
W. C. Walter, Jr.
F. Weinstein
L. Whiteside
L. D. Whittemore
A. Wilson
C. R. Wood
S. A. Wood
D. A. Yaw
R L. Zarnoch

Respectfully, submitted,

H. C. CHAPIN,
Secretary.

SECRETARY'S FINANCIAL REPORT — MAY 31, 1949

	Applications	*Dues, Regular & reinstate*	*Dues, Corporate & Sustaining*	*Miscellaneous*	*Totals*
Received and Transmitted to Treasurer					
August 1, 1948 to March 15, 1949....	$3,871.50	$35,123.50	$41,877.50	$13,116.39	$93,988.89
March 15 to May 31, 1949.....	1,129.50	641.50	2,910.00	6,858.93*	11,539.93
Totals in fiscal year to May 31.....	5,001.00	35,765.00	44,787.50	19,975.32	105,528.82
Leaving deposited by Treasurer with Secretary					6,079.32

		*
Miscellaneous items		
Dividends and interest	$ 655.70	
Year Books	528.16	
Analytical Methods, old	12.50	
Reporters and reprints	78.15	
Colour Index	270.00	
Crockmeters	433.00	
Crock cloth	85.86	
Moth cloth	153.08	
Gas fading unit and royalties	24.40	
Dyed standards	80.00	
Color transfer charts	70.00	
Water test apparatus	55.00	
Buttons	16.00	
Knitted tubing	17.50	
C.W.S., cloth, special order	91.39	
Multifiber cloth, royalties	75.65	
Flammability project	2,000.00	
Q. M. contract	2,113.84	
Q. M. contract, reimburse, moving Apparatus	100.90	
	6,861.13	
Bank charges	— 2.20	
	6,858.93	

GENERAL RESEARCH COMMITTEE MEETING

THE 159th meeting of the General Research Committee was held at the Hotel Warwick in New York, Thursday, June 9, 1949.

Executive Committee on Research

Chairman J. Robert Bonnar presided and reported on activities of the Executive Committee on Research, as follows:

He referred to the need of publicity on the work of the Wash Fastness Committee and steps which have been taken to prepare the necessary data for that purpose. Reference was also made to liaison activities between our committees and seven corresponding committees of A. S. T. M. He mentioned favorably the fact that the Western New England and Hudson-Mohawk Sections had appointed sectional advisory research committees and that the Pacific Coast Section had not as yet been able to name such an organization.

The Wet Processing Exposition then going on contained an A.A.T.C.C. exhibit which was given prominent space and showed the work of our research committees. This same exhibit was retained in New York to be shown at the Convention of the N.R.D.G.A. which was held two weeks later. The Chairman also referred to the fact that we have completed the numbering of our test methods and indicated that the numbering system identifies the year of the latest revision of the test method. It was also mentioned that the American Standards Association have accepted eleven of our tests. All this information will appear in the forthcoming *Year Book*. It was stated that the Corporate Membership Committee is drafting an interim progress report for early circulation. The Chairman also referred to the recent circularization of committee members on test methods of the Society of Dyers and Colourists and stated that while all returns were not in, it appears that the general conclusion will be that they are satisfactory for adoption as temporary methods but further work will be necessary before they may be adopted as standard.

A reference committee on analytical methods has been appointed with Professor Theel as chairman.

Referring to the matter of International Standards Mr. Bonnar stated that progress is somewhat slow but that tests on wash fastness are now going on, to be followed later by tests for perspiration and light. Correlation of this international activity will be effected in England.

Referring to the matter, previously mentioned, to the effect that the American Viscose Company had turned over to N.R.D.G.A. the Crown Tested Seal Program, it was stated that the American Standards Association had set up a Committee L-22 to consider methods of making this program operative under their auspices. The A.A.T.C.C. representative is Charles Seibert with Charles Dorn and Weldon Helmus as alternates.

Director of Research

Dr. H. W. Steigler, Director of Research, reported on activities at Lowell. He stated that the Olney Library has been set up at the Institute and the books are being placed on shelves. It is expected that this literature will be very useful to the staff at Lowell.

In connection with the perspirometer, he stated that both methods of conducting perspiration tests will be in the *Year Book* which comes out this summer.

In connection with the American Viscose fellowship, he reported that the incumbent had left at a time which makes it very inconvenient to secure a replacement. It is expected, however, that a new incumbent can be agreed upon by fall when this fellowship will again become active. Meanwhile the development of the instrument will be continued by the regular staff. This has reference to a small instrument which will enable dimensional changes in fabrics to be followed.

In connection with the committee on wash fastness the laboratories at Lowell have done further work on new containers for the Launder-Ometer. Inter-laboratory tests are being organized.

On water repellency they have checked nozzles and calipered the holes. They are also cooperating with the American Association of Wool Manufacturers on the matter of water repellency tests for wool.

Nomenclature and Classification

Dr. Draves reported that this committee has come to nearly unanimous agreement on the points previously reported. Since the last meeting the General Research Committee had been circularized to determine by vote the precise nomenclature to be used for the highest or Class 8 degree of fastness to light. As a result of this poll the term "maximum" was selected.

Now that all the recommendations have been adopted as the official A.A.T.C.C. nomenclature it is expected that not only will dyestuff manufacturers follow our system for their shade cards but that these terms will be used for the interpretation of fastness tests before technical and consumer groups in general.

Fire Resistance

James Redmond reported that this committee had made a review of data obtained from two series of tests run during 1949. Using statistical and analytical procedures it was observed that real differences between laboratories were indicated and these differences exceeded variations within the fabrics tested. The A.A.T.C.C. apparatus gave the highest test results indicating that it provided more severe testing conditions than the other apparatus. The committee will organize a study of sample holders so that the influence of this factor may be more clearly defined.

The committee had an opportunity to observe the Firestone Film Tester which evoked considerable interest but did not appear especially applicable for many types of highly combustible pile fabrics. Further consideration will be given to the matter of char length so that a new table of char lengths may be prepared. This committee and a similar A.S.T.M. committee have active plans to operate jointly toward improvement of testing procedures without duplication of effort.

Chlorine Retention

Professor Theel reported for Mr. Etchells that the Committee has set up a tentative method for the use of the committee members in making tests. Work is proceeding according to this tentative method but more work needs to be done before a report can be rendered.

Flammability

Dr. Hager reported that inter-laboratory work was suspended last fall and that further work has since been done at Lowell. The results on flat fabrics checked well; not on pile or napped fabrics. Further work involved the following points:

1. Replacing the specimen holder so that it will be removable and give a better exposure to flame.
2. Electrification of apparatus by incorporation of a time clock and micro switches.
3. Replacement of combing devices by a nylon bristled brush for pile fabrics.

Dr. Hager stated that the Rayon Yarn Producers Association had made the sum of $2,000 available and two other groups are considering a donation as it appears that about $5,000 will be needed to see this development through to a conclusion. From present indications about six months' further work is necessary to get the best possible test for pile fabrics.

A question on nomenclature was raised by Dr. Coughlin which caused considerable discussion and developed the fact that the committee has no specific recommendations, at least at this time, and may not ever cover this point because the committee sees its function to be the development of testing instruments and methods, and not to determine how they are to be interpreted.

Wash Fastness

C. A. Seibert reported that the work at Lowell has accomplished the purpose of developing a test which in 45 minutes in the Launder-Ometer gives results similar to those from an average of five commercial or home laundry washings. The use of the metal tube measuring 12 inches by 3 inches cut the capacity of the Launder-Ometer from 20 tests to 10. In addition the tubes were rather heavy for the mechanical construction of the machine. From a selection of various alternative tubes, one which measures 8 inches by three inches has been selected which permits 20 tests, and the cost has been lowered to the neighborhood of $7.00 to $8.00 each. They are also more convenient to handle.

Further work is being done preparatory to inter-laboratory tests. There was some discussion of the possibility of using glass jars and the importance of the shape of these jars. Mr. Dorn referred to the fact that CS-59 specifies the use of rubber balls and asked whether this committee recommends a change in that specification. Mr. Chase stated that the average laundry washes at a pH of about 11.4 which is higher than the pH of A.A.T.C.C. test solutions and this higher pH has a severe affect on stabilization rayon. Mr. Seibert stated that these matters will be checked.

Fastness to Light

439 sets of Calibration Paper 1554 have been distributed with generally favorable comments. Further comments are solicited. With reference to the General Electric Totalizing unit, the company is making certain changes because of several difficulties which have developed. Tests are meanwhile proceeding and plans are made for an extension of these tests as soon as equipment is available. The committee members have examined tests prepared by Mr. Christison in connection with comparative merits of British, German and American blue standards of light fastness. Arrangements have been made to have spectrophotometric measurements of faded portions of the tests carried out in order to furnish numerical expressions of the superiority in fading behavior of the A.A.T.C.C. standards which were visually noted.

Dimensional Changes

Dr. Coughlin stated that the main activity has been that of the Philadelphia Section on the Evaluation of Shrinkage Control of Wool Socks. The purpose of these tests is:

1. To determine satisfactory methods of measuring shrinkage in socks.
2. To find an accelerated method which duplicates some given number of home or commercial launderings.

On the basis of work carried out up to the present time, both the Schieffer and the Scholler devices appear to be capable of doing accurate work. Further work is proceeding after which all the data will have to be examined statistically.

Dr. Coughlin advised that Mr. Anderson has resigned as sub-chairman of the Wool Section of this committee.

Snag Resistance

This committee reports that A.S.T.M. Sub-Committee A-12 of Committee D-13 is considering the adoption of the sand paper test method as a tentative standard. The A.A.T.C.C. committee will probably recommend similar action by the Research Committee at the next meeting. A question was raised from the floor on the snag resistance of monofilament yarn. Since Dr. Smith was not present the report was read by Dr. Stiegler.

Crease Resistance

In the absence of Mr. Gurley, Mr. Barnard reported that work is continuing.

Unsupported Film

Mr. Barnard stated that this committee had no report at this time.

Standard Soil

Mr. Vitalis reported that a study by his committee of formulations which have been used for standard soil indicated that all formulas have carbon black in some form, fatty esters such as lard or Crisco, and mineral oil. The formulas which have come to their attention contain from three to eighteen ingredients with very many variations among the components other than the three mentioned above. The committee is proceeding to detailed tests of two fabrics offered commercially:

(1) Testfabrics, which is a printed soil, (2) U. S. Testing Company's artificial soil prepared by the solvent dip method.

Ageing of Textiles

J. Dean reported that the committee is making progress and building background. He referred to the Quartermaster Weathering Test as an integral part of the program which will probably not be ready in less than two years. With reference to a question which has been raised on the practical value of the carbon arc-water spray type of accelerated weather devices, as a means of predicting service performance of textiles, Mr. Dean referred to recent work on treated cotton duck samples which indicated agreement in not more than 2/3 of the total number tested. This indicates the need of further improvement in artificial weathering technique. Further work is proceeding which it is hoped may be completed and reported at a future date.

Wool Detergency

Mr. Nutting reported that the laboratory detergency comparator has demonstrated its value in further work. The committee recommends that this instrument be adopted as a standard tool for evaluating detergents for wool fabric manufacturing processes. The machine was built by Riggs and Lombard of Lowell, Massachusetts. Upon motion the Research Committee expressed agreement in principle with the recommendations, accepted the report and recommended that the machine be looked into by the Merchandising Committee.

* * * * *

The Chairman, Mr. Bonnar, advised that a committee on the effectiveness of enzymes has been organized. He also advised that future meetings of this committee are expected to be held on September 9, December 9 and January 13. He also reported that the Association has received its final payment on the Quartermaster project. He indicated the possibility of a general research committee meeting in Montreal in June, 1950.

The following people were present:

J. R. Bonnar, Chairman.
H. W. Stiegler, Research Director.
G. H. Schuler, Secretary.

K. H. Barnard
W. H. Cady
H. C. Chapin
H. M. Chase
W. E. Coughlin
J. D. Dean
C. W. Dorn
C. Z. Draves
H. E. Glidden
G. J. Greendonner, Jr.
H. E. Hager
O. B. Hager
A. K. Haynes
H. F. Herrmann
A. E. Hirst
W. A. Holst
N. A. Johnson
A. J. Kellner
M. H. Klein
D. P. Knowland
L. S. Little
P. J. Luck
J. E. Lynn
W. R. Moorhouse
J. E. Norton
F. J. O'Neil
J. R. Redmond
G. L. Royer
W. M. Scott
C. A. Seibert
S. A. Senior
J. H. Skinkle
C. A. Sylvester
H. H. Taylor
P. Theel
F. V. Traut
E. A. Vitalis
J. F. Warner
H. E. Wilde
P. J. Wood

GEO. H. SCHULER,
Secretary.

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Membership Applications

(Concluded from Page P553)

Florence T. Roberts—Chemist, Southern Regional Research Lab., New Orleans, La. Sponsors: C. F. Goldthwait, J. D. Dean.

Robert A. Schoellhorn—Lab. Colorist, American Cyanamid Co., Calco Chemical Div., Philadelphia, Pa. Sponsors: J. Dixon, T. J. Scanlon.

ASSOCIATE

Louis M. Goria—Mgr., Distributor du Pont Dyestuffs, Balderas, Mexico.

Jared L. Johnson—Text. Chemist, Excelsior Mills, Union, S. C.

Fred F. Kraus—Mgr., Dyestuff Dept., Brown & Forth Ltd., New York, N. Y.

Paul A. Krentel—Technical Repres., Catalin Corp. of America, New York, N. Y.

Leonard T. Lawrance—Textile Analyst, National Inst. of Cleaning & Dyeing, Silver Spring, Md.

Dr. Rodolfo Madello—Textile Chemical, Soc. an. Prodotti Chimici Koppe, Milano, Italy.

Charles W. Rulon—Engr., Underwriters Laboratories, Inc., New York, N. Y.

James K. White—Production, Washougal Woolen Mills, Washougal, Wash.

STUDENT

Malbourne G. Michael—Clemson College, Clemson, S. C. Sponsors: J. Lindsay, Jr.

William B. Robertson—Clemson College, Clemson, S. C. Sponsor: J. Lindsay, Jr.

Edward D. Jewell—Georgia Inst. of Technology. Sponsor: C. A. Jones.

Ainslie J. Moo Young—Georgia Inst. of Technology. Sponsor: C. A. Jones.

Franklin Weinstein—Philadelphia Textile Institute. Sponsor: P. Theel.

Respectfully submitted,
RICHARD PAUL BARBER,
Secretary.

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Report, Hudson-Mohawk Section

A DINNER meeting of the Hudson-Mohawk Section, was held at Jack's Restaurant, in Albany, N. Y., on Friday, May 20, 1949. An extremely interesting paper was presented by Dr. J. B. Quig, Assistant Manager of the Development Section, Technical Division, Rayon Department, E. I. DuPont de Nemours & Company, entitled "Orlon-Acrylic Fiber, a New Synthetic".

Previous to the presentation of the paper, Albert Herrmann gave a report on the last National Council meeting. David Hamer outlined plans for the annual outing to be held on June 17th.

Harold Dahlberg reported on plans and progress of the Intersectional Paper. 68 members were present for the dinner with 75 in attendance for the paper.

Respectfully submitted,
W. A. NELSON,
Secretary.

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Research Highlights

TEST NUMBERS.—The adoption of a numbering system for all A.A.T.C.C. official test methods will be a convenience to all technicians in referring to those tests. In the forthcoming *Year Book* the tests will bear the new numbers.

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PERSPIROMETER.—The new Perspirometer is now available and also the new test conditions. The next *Year Book* will recognize both the old and the new test.

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NOMENCLATURE. — The Committee for Nomenclature and Classification has completed its final report. It is anticipated that the new nomenclature will be used not only in sample cards but for interpretation of fastness tests before technical and consumer groups in general.

FLAMMABILITY.—Interest still runs high in the work of the Committee on Flammability. Improvements in the instrument developed by this committee are still an important part of the work at Lowell and grateful recognition is given to those agencies who have provided financial support, so that the work may be driven through to a successful conclusion.

* * * * *

WASH FASTNESS.—The development of a new more stringent method of testing for wash fastness of colored fabrics involves the economics of testing costs. The committee, aware of the importance of this aspect, is refining its technique and searching for minimum equipment changes which will allow the use of present Launder-Ometers and no reduction in the number of tests run at one time.

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CALIBRATION PAPERS.—Fade-Ometer Calibration papers have been distributed by the National Bureau of Standards. The A.A.T.C.C. light fastness committee is interested in having comments from users of these papers.

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SNAG RESISTANCE.—The sand paper test method appears to be headed for acceptance as a tentative standard. Sub-Committee A-12 of A.S.T.M. Committee D-13 is also considering adoption of this test method.

Rain Tester Blotting Paper

In the interests of uniformity and reproducibility in making tests with the A.A.T.C.C. standard Rain Tester a specially manufactured lot of blotting paper has been made exclusively for textile work. Satisfactory inter - laboratory tests have been completed on a representative cross-section of this lot, and the paper is now available for purchase from:

STANDARD PAPER MFG. CO
RICHMOND, VA.
Attention: J. S. WALDEN, SALES DEPT.

Stock Size:—24"x38"—240 lb. per ream (500 sheets).
Minimum Order: 25 lb. (Approx. 50 sheets —24"x38").
Price (Subject to change):
For ¼ ream—27c per lb.
For less than ¼ ream—34c per lb.

The manufacturer is willing to cut these sheets to 6"x6" or any other desired size at a charge of $1.00 per ream ($1.00 minimum cutting charge). When ordering, specify "WHITE A.A.T.C.C. TEXTILE BLOTTING" and send order direct to the manufacturer.

In the past it was found difficult to obtain reproducible results or good correlation in inter-laboratory tests through the use of blotters furnished by different manufacturers or even by the same manufacturer. Because of this situation arrangements were made solely with the above company for the manufacture of a special lot of uniformly - made blotting paper. The manufacturer guarantees to furnish a continuous supply of uniform paper.

• PATENT DIGEST •

PAUL WENGRAF

Shrinkproofing Textiles—Alkylated Methylolmelamines Combined with Nitrogen Bases A, 2, 04

U. S. Pat. 2,466,457

(Am. Cyanamid Co., Lynn-Fluck, April 5, 1949)

The specification refers to the company's U. S. Pat. 2,339,203 and re-issue 22,566 (see below), protecting the use of alkylated methylol melamines for shrinking cellulosic textiles and woolen fabrics respectively. This former method was found to be considerably improved by applying the forementioned melamine derivatives in *non cured state* in conjunction with urea, thiourea or mixtures of both. Similar advantages are also attained by replacing urea or thiourea by guanidine, ammonia or generally nitrogen bases, capable of forming formaldehyde condensates. Any alkylated methylol-melamine condensate, being in a water soluble state of condensation, can be used but preferably products should be applied, consisting of 2-6 mols formaldehyde condensed with one mol melamine under slightly alkaline conditions and etherifying with methanol by acidifying the mixture to a pH of 6.4. The condensates are applied in an amount of 2-15%, calculated on the dry weight of the textiles to be treated. The bases (urea, etc.) are added in varying amounts of 1-10% according to the molecular weight of these compounds. Their effect is caused by binding formaldehyde and thereby increasing the tensile strength of the fibers. The impregnating and drying process is followed by a curing step, carried out at 200-400°F. A table compares tensile strengths and shrinkages after a treatment with methylated methylolmelamine with and without adding urea or thiourea. It could be shown that the effect was not only equal to the results obtained by applying the melamine condensates proper but that the fiber strength was greatly increased. The process is effective for wool, nylon and cotton fabrics.

References cited by the Patent Office, among others:

U. S. Pat. 2,339,203 (Cyanamid): water-soluble methylated methylolmelamine compounds are padded on cellulosic fabrics, which are dried and cured thereafter.

Re-issue 22,566 (Cyanamid): describes shrinkproofing wool with an unpolymerized methylated methylolmelamine (take-up 2-15%), followed by drying and curing.

U. S. Pat. 2,311,489 (Toland): fibers are impregnated with resin solutions, mixed with gelatine or glue (mostly used for improving the tenacity of paper).

Other references:

U. S. Pat. 2,409,906 (Monsanto Ch. C.): the stability of melamine formaldehyde condensates is improved by adding aminodiphenylamine.

U. S. Pat. 2,328,592-93 (Ciba): finishing solutions composed of melamine-formaldehyde are mixed with urea or phenol.

Brit. P. 543,613 (Rohm & Haas): secondary amines are added to melamine-formaldehyde condensates.

Brit. P. 583,428 (Imp. Chem. Ind.): see REPORTER 1947, 438—in contradistinction to the present invention superior shrinkage resistance is said to be obtained by adding excess formaldehyde.

Transparentizing Fabrics With Amino Resin Compositions G, 2, 01

U. S. Pat. 2,466,066

(Heberlein Patent Corporation, Weiss, April 5, 1949)

Transparentizing of cellulose fabrics is generally carried out by treating the material with strong swelling agents; for instance, cold concentrated sulfuric acid, zinc chloride, etc. It is believed that these processes are based on superficially transforming cellulose in plastic translucent compounds. In contrast thereto the present invention comprises a treatment with an aminoplast ether resin, optionally blended with an alkyd-ether resin. It is particularly interesting that the method, obviously based on a chemical transformation of the filaments, is not limited to cellulosic fibers but can also be applied to natural silk, wool and nylon type polymers. The resin is used in form of a solution or an emulsion. The fabric is dried after impregnation and cured at 120-140°C. It is said to acquire a transparent appearance while the original soft handle is preserved (in contradistinction to standard transparentized fabrics). Examples for applying etherified urea formaldehyde resins, etherified melamine formaldehyde resins (both in non cured state) and for mixed amino-alkyd resins are given. The alkyl resins are oil-modified. The resin compositions are used in the form of solutions in lower alcohols or in some cases in the form of emulsions, prepared in the presence of methyl cellulose and polyvinyl alcohol.

No references are cited by the Patent Office.

Reference is made to the same company's Brit. P. 581,785 (REPORTER 1947, 395) and Brit. P. 588,469 (REPORTER 1948, 135).

Cellulose Acetate Printing—Acid and Direct Dyes—Caprolactam D, 2 07

U. S. Pat. 2,468,940

(Du Pont, Charles Franklin Miller, May 3, 1949)

U. S. Pat. 2,439,745 (same company and inventor)—see REPORTER 1948, 632—suggested printing nylon with pastes, containing acid and direct dyes. Caprolactam was used as an auxiliary for fixing these dyestuffs which are otherwise not sufficiently absorbed by the superpolymer polyamide fibers. The present patent discloses that an analogous process can be applied to cellulose ester fibers, particularly to acetate of cellulose. Older processes, comprising the use of thiocyanates, urea, thiourea, p-toluene sulfonate, etc., are said to give poor shades. It was observed, however, that a *combination of thiourea and caprolactam* had great advantages in this respect. It is essential to use the combination of the aforementioned agents which give superior results to those obtained using either agent alone. The improvements attained by this method are characterized by greater brilliance, better penetration, stability of the paste before use and prior to ageing. No volatile agents giving off fumes are employed and only one printing step is used (former methods often requiring pre-swelling of the fibers). Optimal proportions of the agents contained in the printing paste are 2-6% thiourea and 3-7% caprolactam. In one example the following printing formula is recommended: 4% acid dye (Col. Ind. 289 i.e. Pontacyl Sulfone Blue 5 R), 2% thiourea, 3% caprolactam, 91% balance water + thickener. Acetate rayon printed with this paste is aged for 15 min., rinsed cold, soaped for 5 min. at 120°F., rinsed and dried. A rich, well penetrating navy-blue is obtained. A series of acid dyes (for instance, Orange II and Alizarine Cyanine Green FF) and of direct dyes (such as Direct Deep Black EW or Pontamine Fast Black FF) are indicated as giving particularly satisfactory results.

References cited by the Patent Office, among others:

U. S. Pat. 2,133,470 (Celanese), describing a decorating method for acetate rayon,

consisting of preprinting various, non-acetate dyes and cross-printing with thickened swelling agents (e.g., ethyllactate).

U. S. Pat. 2,291,052 (Du Pont-Miller): different acid and direct dyes are printed on acetate of cellulose; the paste contains urea + zinc thiocyanate.

Permanent Finishes—Cellulose Ethers (or Polyvinylalcohols)—Combined With Amino Resins G ,2, 01

U. S. Pat. 2,469,431
(Carbide and Carbon Chem. Co., Broderick, May 10, 1949)

Water soluble cellulose ethers, as well as polyvinylalcohols, are well suited for use as durable finishes. Their great solubility in water is of considerable advantage over other compounds which can be applied only from expensive solvent solutions. The problem in using these kind of compounds can obviously be seen in a practical insolubilizing operation to make them later resistant to water and to cleansing solvents. Moreover, flexibility and clarity of the final finish is required. Formerly some attempts had been made to insolubilize finishing compounds of this type by blending them with pre-condensates of thermosetting resins. These mixtures, however, have the drawback of a poor compatibility of the components. Generally a cloudy suspension, followed by premature gelling, has occurred when *preformed* water soluble amide-formaldehyde condensates were mixed with cellulose ether or polyvinyl solutions. The problem was solved by dispersing separately an amide (urea or melamine) and formaldehyde in a water soluble hydroxy-group containing polymer, preferably in a solution of methyl- or ethylcellulose, having more than 1.5 available OH-radicles per one glucose unit. The dispersion was adjusted to a pH of 7-9 by adding a water soluble amine (ethanolamine), heated to 50-100°C. for about 15-60 minutes to obtain an initial condensation, then cooled to 30°C. and brought to pH = 4.0 — 6.75 by adding a mineral acid, a lower fatty acid or a halogenated fatty acid (monochloroacetic acid). The specification indicates that the time of final curing for this finish is different depending on the acid added. In using monochloroacetic acid the optimal pH is 6.5 and the solution can be stored for weeks before use, while in applying phosphoric acid the liquid which is brought to pH = 4.5 is stable for only 8-24 hours. A modification of this process consists of adding polyglycols such as ethylene glycol, polypropylene glycol and the like. The best proportion of the ingredients is given by the following figures: 1-24 p.b.w. of the cellulose ether and 5 p. of formaldehyde + amide, the ratio of formaldehyde to amide being 0.7-3 p. aldehyde to one p. amide.

According to one of the examples, 100 p. of a 22% solution of water-soluble ethylcellulose were mixed with 6.95 p. polypropylene glycol, 4.61 p. urea and 12.41 formaldehyde (37%). The pH was adjusted to 8.0 with triethanolamine and the *initial* condensation effected at 90-100°C. within an hour. By bringing this solution to pH = 4.4 a finish was obtained which proved to be durable after curing.

References cited by the Patent Office, among others:

U. S. Pat. 2,237,240-41 (Kalle): describing the manufacture of water soluble colloidal condensates (urea or thiourea plus aldehydes) in the presence of cellulose ethers.

B. P. 361,910, 1931 (I. G. Farbenindustrie): the process consisting of condensing polyvinylalcohols with formaldehyde and further reacting these products with urea to form highly viscose emulsions.

Other references are:

U. S. Pat. 2,270,180 (Dow Chemical): suggesting insolubilizing cellulose ethers with urea-formaldehyde condensates.

B. P. 572,906 (Du Pont) ex 1945 (see REPORTER 1946, 475): homogenizing organic solvent soluble cellulose ethers with ethers of methylolurea. The finish becomes insoluble at about 100°C.

The essential part of the present invention is in effecting the initial condensation at pH = 7.5 — 9 by first blending thoroughly the cellulose ether with formaldehyde. The use of monochloroacetic acid, for example, may involve a partial formation of cellulose-glycollic acid, regarding the presence of free OH- groups in the cellulose ether.

Dyeing Cellulose Acetate or Nylon With Insoluble Azo Dyes C, 4, 07

Brit. P. 606,896
(S. A. Francolor, Aug. 23, 1948)

For dyeing cellulose ester or nylon fibers it has been recommended to fix the diazotizable bases and the coupling components (for instance, naphthols) simultaneously within the fibers and to develop the dye in a subsequent diazotization process. This method can only give satisfactory results when the components are carefully measured. Even in working with great precision poor results cannot be completely avoided because of the irregular exhaustion of the azo components. The improvement suggested by the present invention consists of preparing blends of finely and uniformly dispersed powders of the components and adding to these mixtures alkaline agents and dispersing substances. It is within the scope of this invention to add nitrite too, but this addition is only advisable when the development takes place in the dyebath proper and not in a second bath. Therefore, the examples describe pastes in which nitrite of sodium is omitted, while diazotization is carried out in a second bath as usual. For instance, a mixture of m-nitro- p-toluidine (Base de Rouge Solide NJL) and a naphthol of the AS-LG type is prepared and a dispersing agent (for instance, "Tamol") is added. The mixture is finely grounded, dispersed in hot water, dyed on acetate of cellulose, and developed with nitrite + formic acid. A bright yellow shade is obtained.

Dyeing Nylon with Vat Dyes or Indigosols—Improving Fastness to Light C, 4, 07

Brit. P. 603,154
(Durand & Huguenin, June 10, 1948)

Different dyestuff classes give very poor dyeing results on nylon (or other superpolyamides from polyurethanes or the like) in comparison with results obtained on other fibers. This fact has been discussed by Whittaker in the Journal of Dyers and Colourists, April, 1943. He found that "for a reason which has not yet been explained the vat dyes are not as fast to light on nylon as on cellulose... in fact so poor as to render impossible their use on this fiber." The same is true for the solutized vat dyes (indigosols). This specification discloses that the fastness to light of the vat dyes on nylon can be considerably improved by subjecting the dyeings or prints after development in the usual manner (wet or steam) to a subsequent steaming process under superatmospheric pressure in an operation of 20-60 min. This effect is all the more surprising since the vat dyes or indigosols have to be previously developed and rinsed; therefore the dyeings (or prints) are free of oxydizing agents in the steam treatment which is protected by the present patent. A red-violet vat dye (Schultz Ed. 7, N° 1354 i.e., Indanthrene Red Violet RH) is used according to one of the examples on nylon and after developing, soaping and drying, is subjected in a pressure vessel to 2 atmospheres pressure for about 40 min. Another example describes the printing of the same dyestuff in a paste containing Dehapan or Glyecine (dihydroxy-diethyl sulfide) British gum, chlorate and vanadate, and steaming of the prints under pressure of 1½ atmospheres for an hour. In both cases the fastness to light was greatly improved.

Reference:

Treatment of nylon yarns under steam pressure was generally used for setting the filaments, thus preventing subsequent shrinkage (see U. S. Pat. 2,199,411, Du Pont-Lewis of 1940 which indicates that steam setting of nylon is a standard operation). No evidence could be found, however, that this known setting procedure might influence the dyeing effects.

TRADE NOTES • NEW PRODUCTS

• New Fisher Oven

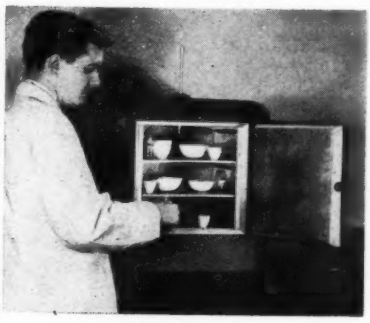
The new Fisher Forced Draft "Isotemp" Oven for general laboratory use (Fisher Scientific Company, 717 Forbes Street, Pittsburgh 19, Penna.) is said to perform drying operations in one-half to one-third the time required with a conventional gravity-type oven. It embodies design features, especially-selected construction materials and operating advantages which are said to produce uniform temperature throughout the 10 x 12 x 12 in. aluminum heating chamber with a minimum consumption of current.

The new oven has a motor-fan unit beneath the heating chamber and an ingenious arrangement of ducts and louvres which conduct hot, dry air to the heating chamber where the air moves gently against and completely around the sample. Once the selected operating temperature (range 75 to 175°C.) is attained, the oven will maintain that temperature within plus or minus 1 degree.

Extra heavy glass wool insulation, aluminum shelving and heavy cast housing are said to afford stability, even heat distribution and efficient operation. Current consumption is 550 watts and the oven draws current during only about one-fifth of the time after reaching pre-set temperature.

Safety features include a special latched door which will open should any pressure develop within the heating chamber; also thermostat elements are sealed in a capsule, heating elements are embedded in a refractory material, and the entire heating area is maintained at a relatively low temperature.

The "Isotem" Forced Draft Oven provides 400 square inches of shelf area. Tests with it show that samples can be dried in about 90 minutes as compared with 200 minutes in a comparable gravity-type oven.



Fisher "Isotemp" Oven

• Courses in Leather and Tanning At Pratt

Pratt Institute of 185 Waverly Ave., Brooklyn 5, N. Y., announces the availability of its 1949-1950 bulletin for the School of Leather and Tanning Technology, containing information on the history, purpose, program, and course descriptions of the school. Full particulars governing expenses, entrance requirements, etc., are covered as well as several illustrations of equipment and course procedure.

The school is run in cooperation with the leather and allied industries, many of whose members are in the Association of Textile Chemists and Colorists. It was started in January, 1948. Curriculum was established and the school tannery built with equipment supplied by the industry.

Pratt reports the first graduates were immediately placed and some thirty other first year students are now being employed in industry during their summer vacations.

The school is quite unique in its nature and the only one of its kind in the Western Hemisphere for training young men in the technical and scientific aspects of a very important industry.

The school invites inquiry and will gladly distribute its bulletin on request.

• Ware Appointed

Thomas M. Ware has been appointed chief engineer of International Minerals & Chemical Corporation as of July 1 and assumes full responsibility of the engineering department. He reports directly to the president of the company, Louis Ware, and succeeds James H. Barr who is retiring from active business after 38 years of service with International. However, it has been announced that Mr. Barr still will be retained by the company in a limited consulting capacity for an indefinite period.

Thomas Ware received his degree in mechanical engineering from Cornell University. Prior to the war he was engaged in armament engineering with the aircraft industry. During the war he was in the United States Navy, Office of Naval Research in the Special Devices Division. Before becoming associated with International he was on the staff of George Fry & Associates, management consulting engineers. His work at International has been as an industrial engineer on the engineering staff.

Dr. Edward F. Degering

• Degering Named

Dr. Edward F. Degering, professor of chemistry and director of industrial research projects at Purdue University, has been named assistant chairman of chemistry and chemical engineering research at Armour Research Foundation of Illinois Institute of Technology.

Appointment of Dr. Degering was announced today by Dr. Louis Koenig, chairman of chemistry and chemical engineering research at the Foundation.

Dr. Degering is widely known among chemists as the author of more than 150 articles in scientific journals and seven books in his field of organic chemistry. He holds more than a dozen patents on organic syntheses.

At the Foundation Dr. Degering will supervise research projects in biochemistry, organic chemistry, literature surveys, and rare chemicals.

Dr. Degering has been associated with Purdue University since 1930, where he has taught organic chemistry, directed research, and written scientific articles on such subjects as antiseptics, germicides, corbohydrates, reaction mechanisms, and organic syntheses. He is 51.

From 1925 to 1930 Dr. Degering taught at the University of Nebraska. He earned his M. S. and Ph. D. degrees there and has also done graduate work at the University of Washington and Cornell University.

Honorary offices held by Dr. Degering include prominent positions in the American Association for the Advancement of Science, American Chemical Society, Indiana Academy of Science, Indiana Chemical Society, and Lions International.

• General Dyestuff Releases

General Dyestuff Corporation, 435 Hudson St., New York 14, N. Y., announces releases of circulars describing the following products:

Diazo Brilliant Scarlet BBLA High Conc. CF—a homogeneous diazo type dyestuff for cotton, rayon and other cellulosic type fibers in their various forms. It is said to produce bright shades of bluish scarlet possessing fairly good to good fastness to washing on cotton and good fastness to washing on rayon when diazotized and developed with Developer AMS or Beta Naphtol. It is said to be valuable for dyeing rayon piece goods where good wet fastness is required and moderate light fastness is sufficient. Aftertreatment with an anti-crease resin finish improves the light fastness distinctly. As usual wtih such a finish, the wash fastness is improved slightly. It exhausts rapidly at a boil and at a slow rate at 150° F. and levels fairly well once it has drawn onto the fiber. The exhaust is easily controlled by proper additions of salt. Acetate rayon effects are stained slightly and animal fibers, considerably. Nylon is stained distinctly. It is sufficiently free from copper and manganese to be suitable for dyeing material to be rubberized. A non-dusting powder, its solubility rate is 2 ozs. per gallon. *Circular G-586*

Acid Chrome Blue 3GA-CF—a mordant acid dyestuff producing full greenish-blue shades on wool said to have very good fastness to light, fulling, crocking, washing, perspiration, carbonizing, water, salt water, hot pressing, and alkali. When applied by the silk-white method, this dyestuff leaves silk-white. It can also be applied to wool by the afterchrome method where silk-white effects are not involved, it is claimed. By either method of application, cotton, viscose and acetate are left unstained. On account of its very good fastness properties and its ability to leave silk and other effect threads white, it is claimed to be especially useful for dyeing woolens and worsteds in the piece. The fastness of this color to wool processing makes it useful for dyeing loose wool, tops and yarn. While most chrome blues turn redder in artificial light, this one turns greener. *Circular G-591*

*Benzo Fast Copper Blue FBLA-CF**—a new homogeneous dyestuff suitable for dyeing cotton, rayon and other vegetable fibers in their various forms. It is said to produce fairly bright shades of greenish blue possessing very good fastness to light on cotton and excellent fastness to light on rayon when dyed and aftertreated with copper sulfate and acetic acid. Fastness to washing is fairly good on both. Aftertreatment with an anti-crease resin finish improves the light fastness slightly and the wash fastness to a distinct degree. The product aftertreated with copper sulfate is especially useful for dyeing of hosiery and hosiery yarns. It may also be used as a direct color without copper aftertreatment for producing fairly bright blues possessing moderate fastness to washing on cotton and moderate to fairly good fastness to washing on rayon. The light fastnes is said to be moderate on cotton and fairly good on rayon. An aftertreatment with an anti-crease resin finish improves both the light fastness and the wash fastness distinctly. When used as a direct color only, the product is sufficiently free from copper and manganese to be suitable for the dyeing of material to be rubberized. Aftertreatment with copper sulfate and acetic acid nullifies the "copper free" designation of the product. The product is supplied in the form of a non-dusting powder which is soluble at the rate of 1 ounce per gallon at 120° F. It is said to exhaust very well at a moderately rapid rate at the boil. *Circular G-594*

Diazo Fast Bordeaux FBLA-CF—a new homogeneous diazo dyestuff which, when applied to cotton, rayon or other vegetable fibers and developed with Developer AMS or Beta Napthol, produces bright shades of bordeaux with good wet fastness properties. The wash fastness is said to be fairly good to good on cotton and rayon while the light fastness is moderate to fairly good on cotton, and good on rayon. Aftertreatment with an anti-crease resin finish improves the light and wash fastness slightly. It is claimed that it exhausts well at a moderately rapid rate at the boil and levels fairly well, once it has drawn onto the fiber. The product exhausts about 40 per cent without salt, but requires the addition of salt for exhaustion. Acetate rayon effects are stained distinctly while animal fibers and nylon are stained heavily. It is a non-dusting powder which is soluble at the rate of 2 ounces per gallon. It is suitable for application in all types of dyeing machinery and is sufficiently free from copper and manganese to be suitable for the dyeing of material to be rubberized. Dyeings are dischargeable in white. *Circular G-595*

Palatine Fast Orange GENA-CF — a metallized acid dyestuff which is said to possess, like other Palatine Fast Colors, fastness properties closely approaching those of chrome colors. It is yellower than the GENA-CF brand and, it is claimed, may be used as yellow shading dyestuff for fast to wear mode shades on better grades of ladies' and men's wear. It can be used on piece goods (especially gabardines), on knitting hosiery, carpet yarns, etc. and on loose wool and slubbing which are to be given a light fulling. Owing to its good dischargeability, it can be used for the production of discharge grounds in mode shades. It also is claimed to be highly suitable for direct prints on wool, weighted and pure silk. Palatine Fast Colors are said to be more level dyeing on material containing different grades of wool or carbonized wool than chrome colors. The product is also suitable for material to be rubberized. *Circular G-598*

Algosol Red IFBB-CF* — the water-soluble leuco ester of the vat dye, Indanthrene Red FBB. When applied in dyeing or printing, it produces shades and fastness properties like the vat dyes. It is said to dissolve easily in water and can be readily developed. The substantivity can be increased by adding salt to the dyebath. It is said to be suitable for printing on cotton according to the sodium chlorate or sodium chromate methods, producing reds of excellent fastness to light, washing and chlorine. Due to its fastness to light it is recommended by the manufacturers for use on drapery and upholstery fabrics. When printing on cotton the best yield, it is claimed, is obtained by the use of the sodium chlorate method, wherein gluconic acid is included in the formula if the goods are to be vat aged, and omitted if developed in acid fumes. A further possibility, when developing in acid fumes, is the use of the sodium chromate method preferred by some plants. It may be printed on rayon or rayon and cotton mixtures by the above methods, but if optimum wash fastness is to be obtained it is recommended that the sodium nitrate wet development method be used. It may also be mixed with other Algosols and can be printed alongside Rapidogen colors to be ultimately acid aged.

In dyeing it is particularly recommended for the dyeing of pink shades and may also be used in combination with other Algosol dyestuffs. The product is suitable for dyeing of cotton and for rayon, in yarns or in piece goods as well as for mixtures containing cotton and rayon, rayon and wool or cotton and wool. Mixed fabrics containing rayon or cotton and wool may be paded to obtain a solid effect or dyed in an acid bath to leave the vegetable fiber undyed. For the dyeing of wool, an aftertreatment with 0.5 to 1 per cent bisulfite of soda for a period of 1 minute at 200° F. immediately after development is recommended.—*Circular G-603*

* U. S. Pat. No. 2,158,843.

* Reg. U. S. Pat. Off.

• Harris Appointed

Dr. Milton Harris, of Harris Research Laboratories, Washington, D. C., has been appointed Section Editor of the Dyes and Textile Chemistry section of *Chemical Abstracts.*

• Textile Students Summer Employment

From New England to the deep South and Pacific Coast, mills of the textile industry will be training grounds this summer for textile college students seeking greater skill and know-how in the vital science of "human engineering."

Scores of firms, large and small, are providing summer work for students from the country's textile educational institutions primarily to increase familiarity with human factors in manufacturing, according to the Textile Information Service.

Whether these programs are set up formally or informally the students work in mills as trainees and do not replace regular employees or take over any work that might provide additional jobs for regular employees. The regular employees help train the students. Payment is generally set at the minimum hourly rate regardless of the job assigned.

Dean Richard S. Cox of Philadelphia Textile Institute reports he is interested more in how his students take orders, get along with fellow workers and otherwise move ahead in the field of personal relations than in the technical experience they pick up during their summer work.

This year all Philadelphia Textile Institute sophomores and juniors, totaling 370, will be taking required summer work in 180 different industrial establishments, mostly in the textile industry. For several years Dean Cox and P.T.I. have pioneered in this type of summer work program.

In New England, Lowell Textile Institute, Lowell, Mass., is entering the second year of its formal co-operative system of education, assisted by 14 textile companies. Thirty-three Lowell students have been chosen for summer assignments in plants of these concerns.

Officials of the Merrimack Manufacturing Company, Lowell, Mass., one of the co-operating companies, emphasize that "no industry today is efficiently managed from the sole basis of technical know-how. Human engineering is equally important as technical knowledge, if not more so."

At Bradford Durfee Technical Institute, Fall River, Mass., an informal program of this type is being carried out, says Dean Leslie B. Coombs. Several Durfee students are undertaking practical work this summer in public utilities, textile machinery installation and allied industries in addition to textile mills. Six Fall River students will automatically take up summer employment in plants of Berkshire Fine Spinning Associates, Inc., as they are holders of Berkshire scholarships.

An increasing number of textile colleges are requiring summer training in mills as a qualification for graduation. All research fellows studying at the Institute of Textile Technology, Charlottesville, Va. must meet this requirement, according to Dean George H. Coleman. This summer will again find Institute students hard at work in member mills, learning at first hand something of the problems they have been studying during the school year. The program of summer employment for students was initiated at I.T.T. last summer and proved to be highly successful.

Southern boys—and girls, in a few cases—are also turning from formal classes this summer to the practical lessons that can only be learned at work in a textile mill. Sizable groups of students in all sections are given the opportunity to receive valuable training while earning money that helps to pay the cost of education.

At Alabama Polytechnic Institute at Auburn, Georgia Institute of Technology, North Carolina State College and Clemson College there are no formal summer training programs in effect. However, both Georgia Tech and Auburn have students studying textiles under a regular co-operative set-up between the school and various mills. Under this plan, students attend classes a quarter and then work a quarter, until twelve class quarters have been reached. Both N. C. State and Clemson encourage students to work in the mills during the summer.

Southern mills participating in co-operative programs include: Avondale Mills, West Point Manufacturing Co., Russell Manufacturing Co., Buck Creek Cotton Mills, Crompton-Highland Mills, Inc., Dundee Mills, Inc., Exposition Cotton Mills, Lowell Bleachery, Tallassee Mills, Pepperell Manufacturing Co. at Lindale and Opelika, Bibb Manufacturing Co., Thomaston Cotton Mills, Huntsville Manufacturing Co., Scottdale Mills, Riegel Textile Co. at Trion, The Jefferson Mills, duPont at Richmond, Piedmont Cotton Mills, U. S. Rubber Co. at Hogansville, Tennessee Eastman Corp., and others.

• ACC Scholarships

The American Cyanamid Company announces the renewal of fifteen scholarships for the academic year 1949-50, chiefly in the fields of chemistry and chemical engineering. Generally these scholarships provide $1,500 and are awarded to graduate students in their last year of pre-doctoral study. Recipients of post doctoral scholarships receive $3,000.

Scholarships have been established at Brown University, Massachusetts Institute of Technology, Columbia University, Princeton University, University of Virginia, Pennsylvania State College, Cornell University, University of Illinois, University of Notre Dame, University of Michigan, University of Wisconsin, University of Minnesota, University of Colorado, and Purdue University.

E. M. Ford

• Ford Elected

E. M. Ford's election to Chairman of the Board of Directors, Wyandotte Chemicals Corporation, effective September 1, 1949, was announced by the Board at Wyandotte. Mr. Ford will continue in his present capacity as President until September 1, when he will assume his new post.

Elected to succeed Mr. Ford, on September 1, as President & Director of the Corporation, was Robert B. Semple, Director of Monsanto Chemical Company's General Development Department.

Mr. Ford has held the Presidency of Wyandotte Chemicals Corporation for 6½ years. This period includes the important war and immediate post-war years when Wyandotte completed its major expansion program marking their entry into the organic chemicals field.

Holder of a Master's Degree in Chemical Engineering from the Massachusetts Institute of Technology, Mr. Semple comes to Wyandotte from Monsanto where he had many years of research and sales experience preceding his appointment as Director of the General Development Department.

The new Wyandotte Chemicals Corporation President is a member of the American Chemical Society, American Institute of Chemical Engineers and the Society of the Chemical Industry.

Robert B. Semple

• Mount Hope Appoints Macknight

At the recent Textile Wet Processing Equipment and Supplies Exhibition in New York the Mount Hope Machinery Co. announced the appointment of Harry A. MacKnight as consulting engineer. Mr. MacKnight is well known throughout the textile finishing industry for his pioneering and constructive contributions to its progress in improved methods and equipment.

Mr. MacKnight will have charge of the installation of Mount Hope Automatic Weft Straighteners. He and J. D. Robertson, President of Mount Hope Machinery Co., have been separately connected with the development of Automatic Weft Straightening since the early thirties when they both worked on the first Automatic Weft Straightener to be built.

• D.Sc. For Bell

William B. Bell, President of the American Cyanamid Company, received the honorary degree of Doctor of Science from the Philadelphia College of Pharmacy and Science in Philadelphia, Pennsylvania. The degree was presented by Dr. Ivor Griffith, President of this Philadelphia college, at the Commencement Exercises held on the campus.

In making the award, emphasis was put on Mr. Bell's services in the field of public health and in the stimulation of pharmaceutical research. Mr. Bell has been President of American Cyanamid Company since 1922, and has been intimately concerned with the drug industry for many years through the Lederle Laboratories Division of that company. This is the organization which introduced Aureomycin, the new antibiotic which has been so effective against a number of important diseases.

Also receiving honorary degrees were Professor E. Fullerton Cook, Chairman of the Revision Committee of the United States Pharmacopoeia; Professor Freeman P. Stroup, a Professor of Pharmaceutical Chemistry at the Philadelphia College of Pharmacy and Science, and John S. Zinsser, Chairman of the Board of Sharpe & Dohme Company.

• Celanese Places Patents

Harold Blancke, president of Celanese Corporation of America, has announced that the company had placed upon the United States Patent Office Register of Patents Available For Licensing approximately 2400 patents covering methods and proceses for the manufacture of textiles, plastics and chemicals. By this action the corporation is making it possible for applicants to take out licenses on reasonable terms under substantially all of the patents owned by the corporation.

Mr. Blancke stated further that the corporation has rights under many patents in England and Canada which correspond to the United States patents placed upon the Patent Office Register today, and that sub-licenses under such patents would be granted to any applicant upon reasonable terms, subject, of course, to British and Canadian laws.

• New Booklet By C. & C.

Synthetic lubricants have been so widely accepted for industrial applications that to meet the demand for more and later information, Carbide and Carbon Chemicals Corporation has completely revised the descriptive matter in its booklet "Ucon Brand Fluids and Lubricants."

This new booklet describes the various types of "Ucon" polyalkylene glycol lubricants and the use of these unusual products for the lubrication of many types of machinery, gears, internal combustion engines, rubber products, and instruments. It also contains much information on the various uses of "Ucon" fluids as hydraulic fluids; leather conditioning agents; plasticizers, softeners, and solvents; de-emulsifiers; defoamers; and heat transfer fluids. Complete physical properties for both the water-soluble and water-insoluble grades of these synthetic lubricants are presented.

Copies of the booklet can be obtained from the company by requesting Form 6500.

• Standard Samples Issued

An up-to-date list of standard samples issued or in preparation by the National Bureau of Standards is now available from the Bureau's Publication Section. The Bureau now issues more than 400 different kinds of standard samples, comprising materials of certified composition such as metals, ores, and ceramics; high-purity hydrocarbons; certain high-purity chemicals; paint pigments for color; oils for viscometer calibrations; melting-point standards; radioactive materials; and a number of reference standards, such as lamp, opacity, and reflectance standards.

These standards have been established during the past 40 years to meet the constantly increasing needs of industrial and research laboratories. They now have a wide distribution; in fact, about 22,000 individual samples were sold during the past fiscal year. Representative uses of the Bureau's standard samples include the checking of chemical and instrumental methods of analysis; developing new methods of analysis; calibration of spectrometers, spectrographs, pH meters, calorimeters, pyrometers, and polarimeters; establishment of uniformity in test methods; and settling and avoiding of disputes between buyers and sellers.

Supplement to National Bureau of Standards Circular 398, *Standard Samples Issued or in Preparation by the National Bureau of Standards:* 19 large-sized pages; containing a schedule of fees, unit weights, directions for ordering, and other information; can be obtained free upon request from the Publications Section, National Bureau of Standards, Washington 25, D. C.

• Leeds & Northrup Celebrates

To celebrate the beginning of its 50th anniversary, Leeds & Northrup Company played host to 3,500 employees and their guests at a dinner, entertainment, and dance in Convention Hall, Philadelphia, on June 4. The company is a manufacturer of electrical measuring instruments, automatic controls, and heat treating furnaces.

Immediately after the dinner C. S. Redding, president of the company, greeted the assemblage on behalf of the company. His talk centered on the vision and achievements of Morris Evans Leeds, founder of the company and now chairman of the board.

Following the presentation of a gold 50-year service plaque to Mr. Leeds, he received a bound testimonial expressing the organization's esteem for its founder.

The testimonial was presented to Mr. Leeds jointly by Robert Craig, president of the Leeds & Northrup Co-operative Association, J. H. Swope, president of the Leeds & Northrup Employees' Union, and Mr. Redding. The party then continued with a minstrel show given by the employees, and the balance of the evening was devoted to dancing to the music of two orchestras.

This is not the first time Convention Hall has been taken over by Leeds & Northrup for a family party. In 1946 more than 2,000 men and women attended a dinner, and heard Mr. Redding explain the wartime achievements and future prospects of the company. But the 1949 birthday party, marking a half century of Leeds & Northrup service to science and industry, was the most elaborate ever planned by the organization.

In 1947 the company received the first annual Industrial Relations Award from the Philadelphia Chamber of Commerce, "because Leeds & Northrup has developed and maintained for the nearly 50 years of its existence one of the country's best industrial relations programs."

In 1920 Mr. Leeds was awarded the Edward Longstreth Medal by Philadel-

phia's Franklin Institute for his invention of the "Leeds mechanism," the first automatic balance-type recorded generally accepted for industrial use. In 1934 he received the Forbes Magazine Award for his employer-employee plan, and in 1936 the Institute of Management presented him with the Gantt Medal "for distinguished achievement in industrial management as a service to the community." In 1946 he received the American Society of Mechanical Engineers' Medal "for outstanding achievements in the invention and development of electrical and temperature recording instruments, and in the field of industrial relations;" in 1949 the American Institute of Electrical Engineers presented him with its highest award, the Edison Medal for scientific achievement; and in this same year he received the Scientific Apparatus Makers' Association's annual award "for outstanding achievement in the scientific instrument industry."

The company now employs approximately 2,000 men and women at its plant at 4901 Stenton Avenue, Philadelphia, and its 14 district offices throughout the country.

• Spring Outing, S.O.C.M.A.

The Spring Outing of the Synthetic Organic Chemical Manufacturers Association of the U. S. was held June 7-9 at the Shawnee Inn, Shawnee-on-Delaware, Pennsylvania. The regular monthly business meeting was held on the 7th.

Golf prizes were awarded as follows:

Low Gross—Frank P. Mackinney, Sandoz Chemical Works, (80).

Kickers—Henry Young, Interchemical Corp.; George Garland, Shell Chemical Corp.; Peter Reilly, Reilly Tar & Chemical Co.; John Emans, Schenectady Varnish Co.; Max Gossweiler, Sandoz Chemical Works, Inc.; Richard Quortrop, Barrett Division, Allied Chemical & Dye Corp.; J. P. Remensnyder, Heyden Chemical Corp.; Fred Wolff, E. I. du Pont de Nemours & Co., Inc. and Neil Conley, Calco Chemical Division, American Cyanamid Company.

Putting—Fred Baumann, Interchemical Corp. (33); Neil Conley, (35) and Henry Young (36).

The golf prizes were presented at the annual dinner held on the evening of June 8th. Other prizes also were awarded at this time to: Harold Dingee, Zinsser & Co.; Neil Conley; William Newton, Columbia Chemical Division, Pittsburgh Plate Glass Co.; C. Scott Althouse, Althouse Chemical Co., and Leonard Tubbs, Arnold Hoffman & Co. Following the awarding of prizes there was a program of music and entertainment.

The next meeting of the Association will be held on September 14th at 12:15 P.M. in the Hotel Commodore, New York.

Dr. C. R. Payne

• Reorganization Announced

The Electro-Chemical Supply and Engineering Co. of Paoli, Penna., one of the oldest firms in the acid and corrosion proofing field, announces a complete reorganization. The new officers and key men aggregate approximately a century of experience in this highly technical and specialized work. In addition to existing facilities, a new plant with 16,000 square feet of floor space is being fully equipped at Emmaus (Allentown), Penna., and will be in operation on the first of July.

The officers of the company are: Dr. C. R. Payne, President; J. Wm. Grant, Vice President and Sales Manager; Wm. A. Sesher, Treasurer and Production Manager; Walter L. Sheppard, Jr. is Advertising Manager and Export Sales Manager.

The Electro-Chemical Supply and Engineering Co. was founded in 1912, and was one of the first companies in the United States established to manufacture acid-proof cements, and to engineer acid-proof construction. It was the first company in the United States to manufacture a two-part fast setting silicate cement (Duro), and was the first to manufacture and install Thiokol plasticized sulfur cement—then called Thiogrout, now known as Brimsto.

• Continental Carbon Transfers

Transfer of several carbon black producing units from Sunray, Texas to Eunice, New Mexico, has recently been completed by the Continental Carbon Company.

These producing units in their new location will produce an additional 1,200,000 pounds a month of channel black. This type of black constitutes more than half of the total amount used by the rubber industry, and, therefore, this increased production will assist in assuring adequate supplies of this important raw material.

• Avondale Mills Announces

Avondale Mills' new fashion styled lines of chambrays will be finished with American Cyanamid Company's Superset Resin to give them lasting wrinkle resistance, Hugh Comer, president of Avondale announced.

Extensive wear tests were conducted over the past 12 months with the cooperation of Cyanamid's Textile Resin Department. The tests are said to show that the Avondale Superset treated chambray may be worn at the office or for general house and street wear for as many as five days without ironing, and still be presentable. Such wrinkles as may appear, hang out overnight. It was also said to have been found that the treated cotton dresses can be ironed dry.

Avondale will feature the Superset Finish in their well-known companion colors. Every striped fabric can be exactly matched to a solid color for interesting combinations because the fabric is dyed in the yarn. The Superset treated chambrays will be of three qualities: Mignon, Marlin, and Valerie—both combed and carded yarns.

Adoption of the Superset Finish for the chambrays follows upon Avondale's introduction last year of Superset treated cord fabric.

• Versatility in New Detergents

Two new, non-ionic synthetic detergents—Antarox A-400 and Antarox A-480—introduced recently by Antara Products, General Aniline & Film Corp., 444 Madison Avenue, New York 22, N. Y., are said to be displaying versatility at low cost in many different detergent applications.

The fact that these two new detergents of the aromatic polyethylene glycol ether type are practically odorless, says the manufacturer, makes them particularly valuable for the specialized demands made upon detergents today.

Antarox A-400 and A-480, because of their ether structure, are said to be extremely stable in the presence of acids, alkalis and electrolytes. Because they do not ionize, they will not form insoluble compounds in hard water. They do not easily decompose or separate.

The new Antaroxes are foamers, according to Antara Products, making possible the formulation of products with consumer appeal. Their physical and chemical properties will not change over long periods of storage. They are also capable of withstanding wide variations in temperature.

Samples of Antarox A-400 and A-480, as well as complete technical information on their characteristics and applications, are available, the company says.

• Annual Sales Meeting

With all members of the national sales staff in attendance, the annual sales meeting of the American Aniline Products, Inc., of New York was held at Lock Haven, Pa., on July 7th and 8th. In addition to the national representatives from various important cities the following branch managers were in attendance: H. I. Bolton from Boston; E. K. Bush from Providence; A. H. Seitz from Philadelphia; E. F. Smith from Chicago; R. W. Freeze from Chattanooga; J. H. Orr from Charlotte; F. Wilhelm from Los Angeles and G. L. Armour, Executive Vice President, from New York.

Both days were devoted to lectures and discussions of the latest methods and discoveries in the commercial use of dyestuffs. The meeting closed with a banquet on Friday night at which G. L. Armour delivered the principal address.

Prominent on the program were J. J. Marshall who conducted the technical discussions; Robert H. Nuttall, who lectured on Napthol Dyeing and Printing; Herman W. Schoelzel, whose topic was "Pixol: In Wool Dyeing and Finishing"; Frank J. Morris, presenting "Amacel Colors: Their Usage and Application"; W. J. Loeffler, Secretary of the Company, who gave a talk on Foreign Relations; W. O. Henly, Comptroller, who discussed the financial aspects of selling; Elmer F. Smith who lectured on "Miscellaneous Sources of Dyestuff Business Outside the Textile Trade"; Carroll F. Martin, Jr., who lectured on "Amacel Colors for Nylon Hosiery"; Louis J. Dogin who spoke on "Printing of Acetate—Screen and Roller"; Rufus W. Freeze's topic of "Levelene—Its application in Various Phases of Dyeing and Stripping" and Harry W. Ericson, who lectured on "Vat Colors Dyed on Wool."

The last feature of the program was under the direction of W. D. Baird of the Company's Main Laboratory. It consisted of a forum of the American Aniline application chemists who had attended the sales meeting. These came from all the plants and branches of American Aniline Products and are regarded as the men on the "firing line" of the dye industry.

As a relief from the hard work of the general meeting, arrangements were made for a "social hour" at the home of Talfryn James in Lock Haven and an early evening reception at the Clinton Country Club.

• New Chlorine Safety Precaution Chart

A new chlorine safety precaution chart has been announced by the Solvay Sales Division, Allied Chemical & Dye Corporation, for distribution to persons and companies using or handling liquid chlorine.

The chart measuring 16½" x 23", is designed to be hung wherever chlorine is handled. It contains information regarding emergency procedure in case of leakage, first aid recommendations, as well as general chlorine handling precautions. The chart is printed on a heavy yellow backing and varnished to withstand exposure.

This precaution chart is available without obligation from the Solvay Sales Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, New York.

Book Reviews

Elsevier's Encyclopedia of Organic Chemistry

Vol. 12B. F. Radt, editor. xxx + 366 pages. Elsevier Publishing Company, Inc. 215 Fourth Avenue, New York 3, N. Y. 1949. Subscription $24; series $28; single volume, $32.

Vol. 12 of this series treats with bicyclic carboisocyclic compounds. Because the number of compounds containing the naphthalene skeleton is large, Vol. 12 is divided into two parts: Vol. 12A includes all bicyclic compounds except those with the naphthalene skeleton, which are contained in Vol. 12B. It is planned to publish Vol. 12B in seven parts, of which this volume, containing only the hydrocarbons and halogen compounds, is the first. The literature is completely cited up to and including 1944. A few later references are listed also.

It is a pleasure to report essential accuracy and complete coverage. Chemists will be indebted to Dr. Radt and his collaborators for the much needed extension of "Beilstein" and for doing their work so thoroughly.—T. F. K.

Fundamental Processes of Dye Chemistry

H. E. Fierz-David & L. Blangey Translated from the Fifth Austrian Edition by P. W. Vittum

Interscience Publishers, Inc., New York, N. Y. 1949. xxix + 479 pages. Price $9.50.

This translation of the fifth edition of Fierz-David is a very thorough laboratory manual, and it should prove to be an excellent advanced text for organic laboratory courses, particularly in those schools where dye chemistry is a major subject. The presentation is ideally suited to the modern educational trend toward teaching the fundamentals of chemistry by the use of applied science.

The coverage is very comprehensive, starting from the basic physical techniques employed in the organic laboratory and going through the fundamental chemistry of the intermediates to the laboratory syntheses of representatives of the more important classes of organic dyes. As each new principle is encountered, the authors present a detailed discussion of the points involved. Consequently the scope of the text, as the title indicates, is the presentation of fundamentals of chemistry rather than the mere preparation of fundamentls of chemistry rather than the mere preparation of dyestuff compounds from a "cookbook" standpoint as is the case with so many laboratory texts.

In addition to the sections on intermediates and dyestuffs, there are four other important sections. There is a section devoted to the technical details of both laboratory and commercial manufacture of dyestuffs. Two analytical sections are quite good. The first covers the analysis of starting materials used in the organic preparations, and the second is devoted to the problems involved in the determination of the constitution of an unknown commercial dye. The common analytical techniques used in determining the structure of a dye are described and examples of the application of the methods are given for different representative cases. Finally, there is a short section on the determination of light fastness which is primarily historical.

The book is profusely illustrated with pictures and diagrams of laboratory and plant apparatus, and also contains many charts, graphs, and tables. The appendix contains twenty-one tables of derivatives of various intermediates arranged in flow chart fashion, and there is also included an index of reactions, all of which make for a very useful and desirable reference book.—J. B. M.

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the color achievement of the month

Study in Brown

. . . BY JUILLIARD

The fabric in this spring coat — a fine worsted gabardine called "Planeteen" by A. D. Juilliard & Co., Inc. — presents a challenge to the dyer . . . in the sense that the extremely long wear of the fabric must be matched by equal service from the dye.

For such fabrics, many textile leaders prefer the Sandoz ALIZARINE series of dyestuffs, of which the recommended number for the color shown in the Juilliard coat is

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These ALIZARINE colors have proved to be unsurpassed in fastness to light, regardless of whether dyed neutral, acid or by the simple Metachrome method which was brought back into prominence by the Sandoz Metomega Chrome Colors.

For any chrome, acid or direct dyes . . . or auxiliary chemicals . . . for both natural and synthetic fibres. . . be guided by the successful "color achievements" you see in these Sandoz advertisements.

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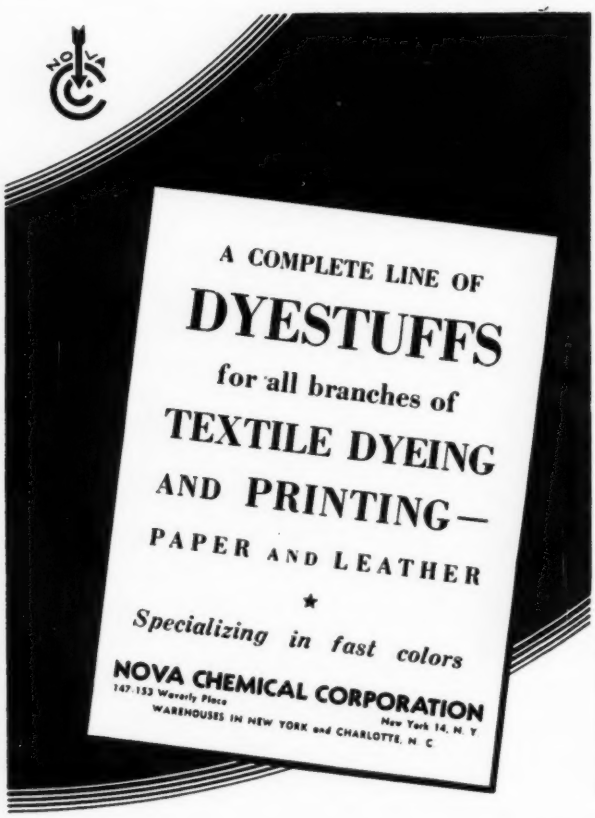

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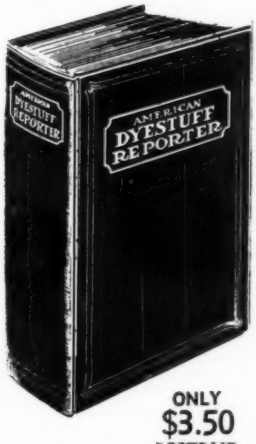

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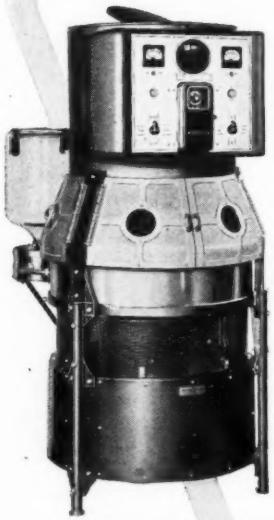

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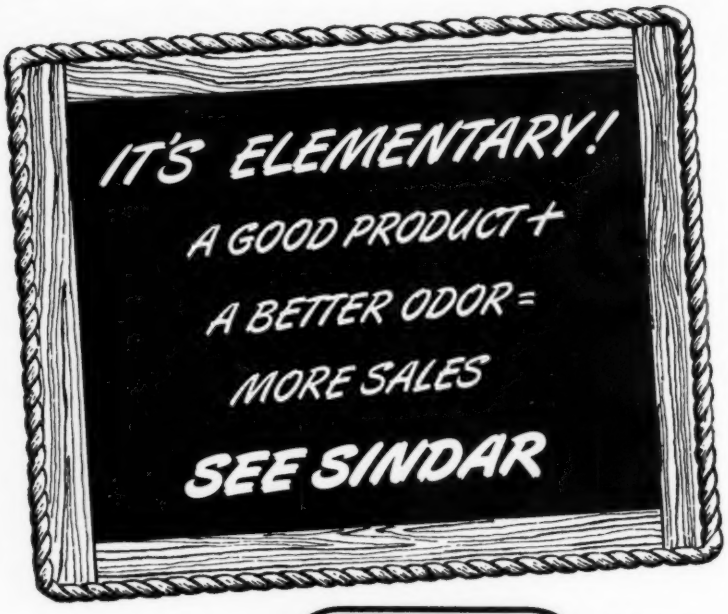

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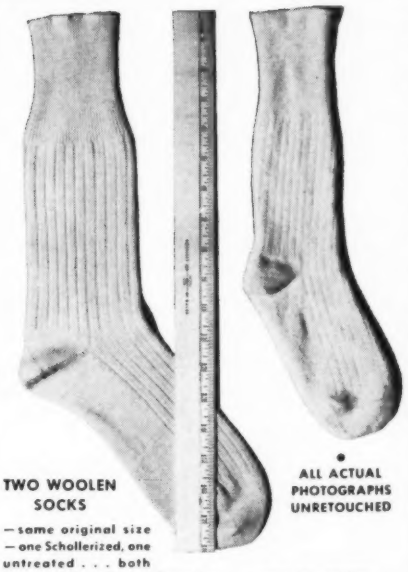

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